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(FILE 'HOME' ENTERED AT 10:38:48 ON 02 MAY 2005)

FILE 'HCAPLUS' ENTERED AT 10:38:59 ON 02 MAY 2005

E AUDENAERT F/AU  
 L1 20 SEA ABB=ON PLU=ON ("AUDENAERT F"/AU OR "AUDENAERT FRANS"/AU  
 OR "AUDENAERT FRANS A"/AU OR "AUDENAERT FRANS ALBERT"/AU)  
 E DAMS R/AU  
 L2 239 SEA ABB=ON PLU=ON ("DAMS R"/AU OR "DAMS R A J"/AU OR "DAMS  
 RALPH W L J"/AU)  
 E DAMS RUDOLF/AU  
 L3 41 SEA ABB=ON PLU=ON ("DAMS RUDOLF"/AU OR "DAMS RUDOLF J"/AU OR  
 "DAMS RUDOLF J E A"/AU OR "DAMS RUDOLF JOZEF"/AU OR "DAMS  
 RUDOLPH J"/AU)  
 E TAN L/AU  
 L4 140 SEA ABB=ON PLU=ON ("TAN L"/AU OR "TAN L S"/AU OR "TAN L S  
 K"/AU OR "TAN L SENG"/AU)  
 E TAN LIAN/AU  
 L5 7 SEA ABB=ON PLU=ON ("TAN LIAN"/AU OR "TAN LIAN S"/AU OR "TAN  
 LIAN SOON"/AU)  
 L6 2229 SEA ABB=ON PLU=ON (3M (1A) INNOV?)/CS, PA  
 E POLYETHER/CT  
 E POLYETHERS/CT  
 E SURFACTANT/CT  
 E SURFACTANTS/CT  
 E E3+ALL  
 L7 QUE ABB=ON PLU=ON SURFACTANTS+OLD, NT/CT  
 E E35  
 E E3+ALL  
 L8 5960 SEA ABB=ON PLU=ON SURFACE ACTIVITY+OLD, NT/CT  
 E SURFACTANT ADSORPTION/CT  
 E E3+ALL  
 L9 414 SEA ABB=ON PLU=ON SURFACTANT ADSORPTION/CT  
 E PENETRATING AGENTS/CT  
 E E3+ALL  
 L10 572 SEA ABB=ON PLU=ON PENETRATING AGENTS/CT  
 L11 13 SEA ABB=ON PLU=ON (L1 OR L2 OR L3 OR L4 OR L5) AND (L7 OR L8  
 OR L9 OR L10)  
 L12 123 SEA ABB=ON PLU=ON L6 AND (L7 OR L8 OR L9 OR L10)  
 L13 13 SEA ABB=ON PLU=ON L11 AND ?FLUOR?

FILE 'REGISTRY' ENTERED AT 10:44:16 ON 02 MAY 2005

FILE 'HCAPLUS' ENTERED AT 10:44:17 ON 02 MAY 2005

L14 TRA L13 1- RN : 226 TERMS

FILE 'REGISTRY' ENTERED AT 10:44:18 ON 02 MAY 2005

L15 226 SEA ABB=ON PLU=ON L14

FILE 'WPIX' ENTERED AT 10:44:24 ON 02 MAY 2005

E AUDENAERT F/AU  
 L16 17 SEA ABB=ON PLU=ON ("AUDENAERT F"/AU OR "AUDENAERT F A"/AU OR  
 "AUDENAERT F A G"/AU)  
 E DAMS R/AU  
 L17 45 SEA ABB=ON PLU=ON ("DAMS R"/AU OR "DAMS R J"/AU)  
 E TAN L/AU  
 L18 172 SEA ABB=ON PLU=ON ("TAN L"/AU OR "TAN L S"/AU)  
 L19 4251 SEA ABB=ON PLU=ON (3M (1A) INNOV?)/CS, PA  
 L20 43873 SEA ABB=ON PLU=ON (A12-W12C OR B12-M09 OR C12-M09 OR D08-B13  
 OR H08-E05)/MC OR (Q616 OR R319)/M0, M1, M2, M3, M4, M5, M6  
 L21 80 SEA ABB=ON PLU=ON (L16 OR L17 OR L18 OR L19) AND L20  
 L22 7 SEA ABB=ON PLU=ON L21 AND C009/M0, M1, M2, M3, M4, M5, M6

=> b hcap

FILE 'HCAPLUS' ENTERED AT 10:52:34 ON 02 MAY 2005

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FILE LAST UPDATED: 1 May 2005 (20050501/ED)

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L13 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:818177 HCAPLUS

DN 139:324175

ED Entered STN: 17 Oct 2003

TI Dispersions containing bicomponent **fluoropolymer** particles and use thereof

IN Buckanin, Richard S.; **Tan, Lian S.**; McAlister, E. Steven

PA 3M Innovative Properties Company, USA

SO U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM C08F116-12

INCL 526247000; 526249000; 526250000; 526206000; 524458000; 524805000

CC 37-3 (Plastics Manufacture and Processing)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003195314	A1	20031016	US 2002-117714	20020405
	US 6822059	B2	20041123		
	WO 2003087179	A1	20031023	WO 2003-US4070	20030212
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	BR 2003008568	A	20050104	BR 2003-8568	20030212
	EP 1492827	A1	20050105	EP 2003-713416	20030212
	R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK			
PRAI	US 2002-117714	A	20020405		
	WO 2003-US4070	W	20030212		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2003195314	ICM	C08F116-12
	INCL	526247000; 526249000; 526250000; 526206000; 524458000; 524805000
US 2003195314	NCL	526/247.000; 524/458.000; 524/805.000; 526/206.000; 526/249.000; 526/250.000
	ECLA	C08F002/24; C08F216/14B; C08F259/08; C08F261/06; C08L027/12+B2; C08L051/00B+B; D06M015/353
WO 2003087179	ECLA	C08F002/24; C08F216/14B; C08F259/08; C08F261/06; C08L027/12+B2; C08L051/00B+B; D06M015/353

- AB A method of making a bicomponent **fluoropolymer** dispersion comprises: a. pre-emulsifying an aqueous mixture of a **perfluorovinyl** ether monomer in the presence of a **fluorochem.** emulsifier to an average emulsion droplet size of one micron or less, and b. polymerizing the **perfluorovinyl** ether in the presence of a free-radical initiator at temperature and for a time sufficient to produce particles of poly(**perfluorovinyl** ether), c. subsequently adding at least one addnl. **fluorinated** comonomer without addnl. emulsifier, and d. further polymerizing the resulting mixture. The dispersions of the present invention may be used for rendering fibrous substrates oil repellent, water repellent and/or stain repellent without altering the looks and feel of the substrate. A dispersion was prepared by polymerization of **perfluoropropoxypropyl** vinyl ether followed by polymerization with **hexafluoropropene** and vinylidene **fluoride**.
- ST **fluoropolymer** dispersion emulsion polymn oil water repellent
- IT Emulsification  
Oilproofing agents  
Water-resistant materials  
(dispersions containing bicomponent **fluoropolymer** particles and use thereof)
- IT **Fluoropolymers**, uses  
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)  
(dispersions containing bicomponent **fluoropolymer** particles and use thereof)
- IT Polymerization  
(emulsion; dispersions containing bicomponent **fluoropolymer** particles and use thereof)
- IT **Emulsifying agents**  
(**fluorochem.**; dispersions containing bicomponent **fluoropolymer** particles and use thereof)
- IT Textiles  
(substrate; dispersions containing bicomponent **fluoropolymer** particles and use thereof)
- IT 196623-59-3, **FLUOROLINK C** 314057-81-3, NAFION SE10172  
RL: MOA (Modifier or additive use); USES (Uses)  
(dispersing agent; dispersions containing bicomponent **fluoropolymer** particles and use thereof)
- IT 612801-40-8P  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(dispersions containing bicomponent **fluoropolymer** particles and use thereof)

L13 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:796358 HCAPLUS

DN 139:292888

ED Entered STN: 10 Oct 2003

TI Dispersions containing **perfluorovinyl** ether homopolymers useful as textile finishing materials

IN **Tan, Lian S.**; Buckanin, Richard S.; McAlister, E. Steven

PA 3M Innovative Properties Company, USA

SO U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM C08F116-12

INCL 526247000; 526249000; 526250000; 526206000; 524458000; 524805000

CC 37-3 (Plastics Manufacture and Processing)

Section cross-reference(s): 40

FAN. CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003191258	A1	20031009	US 2002-117715	20020405
	US 6833418	B2	20041221		
	WO 2003087176	A1	20031023	WO 2003-US3257	20030204
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,				

PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,  
 UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,  
 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF,  
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
 EP 1492826 A1 20050105 EP 2003-706061 20030204  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK  
 BR 2003009036 A 20050201 BR 2003-9036 20030204  
 PRAI US 2002-117715 A 20020405  
 WO 2003-US3257 W 20030204

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2003191258	ICM	C08F116-12
	INCL	526247000; 526249000; 526250000; 526206000; 524458000; 524805000
US 2003191258	NCL	526/247.000; 524/458.000; 524/805.000; 526/206.000; 526/249.000; 526/250.000
	ECLA	C08F116/14

AB A method for producing a **perfluorovinyl** ether homopolymer dispersion comprises the steps of (a) pre-emulsifying an aqueous mixture of a **perfluorovinyl** ether in the presence of a **fluorinated** emulsifier to an average emulsion droplet size of one micron or less, and (b) polymerizing the **perfluorovinyl** ether in the presence of an initiator at temperature and for time sufficient to produce particles of poly(**perfluorovinyl** ether). The aqueous **fluoropolymer** dispersion can comprise bicomponent particles of the poly(**perfluorovinyl** ether) and a second **fluoropolymer**. In combination with auxiliary textile finishing agents, the poly(**perfluorovinyl** ether) dispersions can be used for improving oil repellency, soil/stain repellency and/or water repellency of fibrous substrates. Thus, **Fluorolink C** (3.3) and potassium hydroxide (0.186) were dissolved in deionized water (90.0), followed by addition of Nafion SE 10172 (0.0175) and **perfluoro**(propoxypropyl vinyl ether) (50.0 g). The resulting aqueous mixture was sonicated for 60 s and homogenized to yield an emulsion with a mean droplet size of 144 nm. A solution of deionized water (10.0), sodium bicarbonate (0.2) and ammonium persulfate (0.2 g) was added, and the emulsion was heated at 60° for 20 h under nitrogen producing a homopolymer dispersion with a mean particle size of 62 nm, the monomer conversion being 82%.

ST **perfluorovinyl** ether polymer dispersion textile finishing agent  
 IT Fabric finishing  
 (agents; dispersions containing **perfluorovinyl** ether homopolymers useful as textile finishing materials)  
 IT Disperse systems  
 Oilproofing agents  
 Soilproofing agents  
 Textiles  
 Waterproofing agents  
 (dispersions containing **perfluorovinyl** ether homopolymers useful as textile finishing materials)  
 IT **Fluoropolymers**, preparation  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (dispersions containing **perfluorovinyl** ether homopolymers useful as textile finishing materials)  
 IT Ionomers  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (emulsifiers; production of dispersions containing **perfluorovinyl** ether homopolymers by emulsion polymerization)  
 IT Polymerization  
 (emulsion; production of dispersions containing **perfluorovinyl** ether homopolymers by)  
 IT Polyethers, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (**perfluoro**, emulsifiers; production of dispersions containing **perfluorovinyl** ether homopolymers by emulsion polymerization)  
 IT **Fluoropolymers**, uses

RL: NUU (Other use, unclassified); USES (Uses)  
 (polyether-, **perfluoro**, emulsifiers; production of dispersions  
 containing **perfluorovinyl** ether homopolymers by emulsion polymerization)

IT **Emulsifying agents**  
 (production of dispersions containing **perfluorovinyl** ether  
 homopolymers by emulsion polymerization)

IT 70087-25-1P, **Perfluoropropyl** vinyl ether homopolymer  
 98973-10-5P 384819-14-1P  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material  
 use); PREP (Preparation); USES (Uses)  
 (dispersions containing **perfluorovinyl** ether homopolymers useful  
 as textile finishing materials)

IT 29420-49-3, Potassium **perfluorobutanesulfonate** 196623-59-3,  
**Fluorolink C** 314057-81-3, Nafion SE 10172  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (emulsifier; production of dispersions containing **perfluorovinyl**  
 ether homopolymers by emulsion polymerization)

IT 7727-54-0, Ammonium persulfate  
 RL: CAT (Catalyst use); USES (Uses)  
 (production of dispersions containing **perfluorovinyl** ether  
 homopolymers by emulsion polymerization)

L13 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2003:757353 HCAPLUS  
 DN 139:261660  
 ED Entered STN: 26 Sep 2003  
 TI Emulsion polymerization of using **fluorinated** surfactants  
 IN **Tan, Lian S.**; Buckanin, Richard S.  
 PA USA  
 SO U.S. Pat. Appl. Publ., 24 pp., Cont.-in-part of U.S. Ser. No. 861,782.  
 CODEN: USXXCO

DT Patent  
 LA English  
 IC ICM C08F114-18  
 INCL 524502000; 524529000; 524543000; 526242000; 526245000  
 CC 35-4 (Chemistry of Synthetic High Polymers)  
 FAN. CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2003181572	A1	20030925	US 2003-350457	20030124
US 2003139521	A1	20030724	US 2001-861782	20010521
US 6737489	B2	20040518		
WO 2004067588	A1	20040812	WO 2003-US40145	20031205
W:				
AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,				
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,				
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,				
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO,				
NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,				
TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,				
BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE,				
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,				
TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI US 2001-861782	A2	20010521		
US 2003-350457	A	20030124		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2003181572	ICM	C08F114-18
	INCL	524502000; 524529000; 524543000; 526242000; 526245000
US 2003181572	NCL	524/502.000; 524/529.000; 524/543.000; 526/242.000; 526/245.000
	ECLA	C08L027/12+B2; D06M013/395; D06M013/432; D06M015/256; D06M015/263; D06M015/277; D06M015/353; D06M015/356N; D06M015/356S; D06M015/568
US 2003139521	NCL	526/242.000; 524/502.000; 524/529.000; 524/543.000; 526/247.000
	ECLA	C08L027/12+B2; D06M013/395; D06M013/432; D06M015/256; D06M015/263; D06M015/277; D06M015/353; D06M015/356N; D06M015/356S; D06M015/568

WO 2004067588 ECLA C08F014/18+2/22  
 AB The method comprises adding a **fluorinated** surfactant having a mol. weight of at least about 1000 g/mol to an emulsion polymerization process. Ammonium **perfluorooctanoate** was used as an emulsifier in polymerization of CF<sub>2</sub>:CF<sub>2</sub> and **perfluoro**(Me vinyl) ether.  
 ST **fluorinated** surfactant emulsion polymn  
 IT Polymerization  
     (emulsion; emulsion polymerization of using **fluorinated** surfactants)  
 IT **Surfactants**  
     (**fluorinated**; emulsion polymerization of using **fluorinated** surfactants)  
 IT Polyethers, uses  
     RL: TEM (Technical or engineered material use); USES (Uses)  
         (**perfluoro**, surfactant; emulsion polymerization of using **fluorinated** surfactants)  
 IT **Fluoropolymers**, uses  
     RL: TEM (Technical or engineered material use); USES (Uses)  
         (polyether-, **perfluoro**, surfactant; emulsion polymerization of using **fluorinated** surfactants)  
 IT 26425-79-6P 70087-25-1P 74499-68-6P 80975-16-2P 98973-10-5P  
     349118-39-4P 384819-14-1P 477198-48-4P  
     RL: IMF (Industrial manufacture); PREP (Preparation)  
         (emulsion polymerization of using **fluorinated** surfactants)  
 IT 3825-26-1, Ammonium **perfluorooctanoate**  
     RL: TEM (Technical or engineered material use); USES (Uses)  
         (emulsion polymerization of using **fluorinated** surfactants)  
 IT 314057-81-3, Nafion SE10172  
     RL: TEM (Technical or engineered material use); USES (Uses)  
         (surfactant; emulsion polymerization of using **fluorinated** surfactants)

L13 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2003:417794 HCAPLUS  
 DN 139:7655  
 ED Entered STN: 01 Jun 2003  
 TI Compositions for aqueous delivery of **fluorinated** silanes  
 IN Terrazas, Michael S.; Pellerite, Mark J.; Dams, Rudolf J.  
 PA 3M Innovative Properties Company, USA  
 SO PCT Int. Appl., 43 pp.  
     CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM C08G065-336  
     ICS C08G077-00; C09D183-00  
 CC 37-3 (Plastics Manufacture and Processing)  
     Section cross-reference(s): 42

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2003044075	A1	20030530	WO 2002-US34278	20021025
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
US 6592659	B1	20030715	US 2001-2543	20011115
EP 1444290	A1	20040811	EP 2002-776307	20021025
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK			
JP 2005509708	T2	20050414	JP 2003-545709	20021025
PRAI US 2001-2543	A	20011115		
WO 2002-US34278	W	20021025		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES

WO 2003044075 ICM C08G065-336  
 ICS C08G077-00; C09D183-00  
 US 6592659 NCL 106/287.130; 106/287.140; 106/287.270; 427/387.000;  
 428/421.000; 428/447.000  
 JP 2005509708 FTERM 4H020/BA11; 4H020/BA21; 4H020/BA23; 4H020/BA36;  
 4J002/BQ002; 4J002/CH052; 4J002/CP081; 4J002/CP181;  
 4J002/EF006; 4J002/EN006; 4J002/EV286; 4J002/FD312;  
 4J002/FD316; 4J002/GH01; 4J005/AA04; 4J005/BD05;  
 4J005/BD08; 4J038/CG032; 4J038/CG142; 4J038/CH262;  
 4J038/CJ252; 4J038/DF011; 4J038/DF012; 4J038/DL051;  
 4J038/DL061; 4J038/DL161; 4J038/GA02; 4J038/GA06;  
 4J038/GA09; 4J038/GA12; 4J038/GA13; 4J038/HA156;  
 4J038/KA09; 4J038/MA07; 4J038/MA08; 4J038/MA09;  
 4J038/NA07

AB The invention relates to a dilutable, nonaq. concentrate and an aqueous dilution used for aqueous delivery of **fluorinated** silanes to a substrate, a method of treating a substrate with the aqueous dilution composition to render it oil and water repellent, and articles having coatings made from the aqueous dilution. The aqueous dilution may be coated on a substrate to provide a durable coating. Thus, shaking 5.0 g a 10% solution of Krytox 157FS(L) (carboxy group-containing **fluoropolymer**) ammonium salt in MeOH with 1.0 g trimethoxysilylpropylamido group-terminated **perfluorinated** polyether (I) gave a single-phase liquid containing 16.7% I. Diluting 0.5 g the concentrated solution above with 10.0 g water gave a clear dilution with no precipitation

ST silane deriv **perfluorinated** polyether aq conc diln surface treatment

IT Ceramics  
 Coating materials  
 (dilutable concs. for aqueous delivery of **fluorinated** silanes)

IT Glass, miscellaneous  
 RL: MSC (Miscellaneous)  
 (dilutable concs. for aqueous delivery of **fluorinated** silanes)

IT **Surfactants**  
 (**fluorosurfactants**; dilutable concs. for aqueous delivery of **fluorinated** silanes)

IT Polyethers, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (**perfluoro**, silylated; dilutable concs. for aqueous delivery of **fluorinated** silanes)

IT **Fluoropolymers**, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (polyether-, **perfluoro**, silylated; dilutable concs. for aqueous delivery of **fluorinated** silanes)

IT 101947-16-4 220864-25-5 233676-28-3  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (surface treatment; dilutable concs. for aqueous delivery of **fluorinated** silanes)

IT 30136-13-1, Dowanol PnP 68259-10-9 126600-08-6, KRYTOX 157FS(L) ammonium salt  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (surfactant; dilutable concs. for aqueous delivery of **fluorinated** silanes)

RE. CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE  
 (1) Du Pont; EP 0611771 A 1995 HCAPLUS  
 (2) Du Pont; WO 9523804 A 1995 HCAPLUS  
 (3) Minnesota Mining & Mfg; EP 0611771 A 1994 HCAPLUS  
 (4) Minnesota Mining & Mfg; EP 0611771 A 1997 HCAPLUS  
 (5) Minnesota Mining & Mfg; WO 9723432 A 1997 HCAPLUS

L13 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2003:22928 HCAPLUS  
 DN 138:90650  
 ED Entered STN: 10 Jan 2003  
 TI Imide salts as emulsifiers for the polymerization of **fluoroolefins**  
 IN Lamanna, William M.; Savu, Patricia M.; Sierakowski, Michael J.; Tan, Lian S.  
 PA 3M Innovative Properties Company, USA  
 SO PCT Int. Appl., 24 pp.  
 CODEN: PIXXD2

DT Patent  
 LA English  
 IC ICM C08F014-18  
 ICS C08F002-26  
 CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 46

FAN. CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2003002622	A1	20030109	WO 2002-US10291	20020402
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, FL, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
US 2003018149	A1	20030123	US 2001-896319	20010629
US 6545109	B2	20030408		
EP 1406936	A1	20040414	EP 2002-780934	20020402
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR			
JP 2004531632	T2	20041014	JP 2003-509001	20020402
PRAI US 2001-896319	A	20010629		
WO 2002-US10291	W	20020402		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2003002622	ICM	C08F014-18
	ICS	C08F002-26
US 2003018149	NCL	526/220.000; 526/217.000; 526/222.000; 526/247.000; 526/250.000; 526/254.000
	ECLA	C08F014/18+2/16
JP 2004531632	FTERM	4J011/KA02; 4J011/KA03; 4J011/KA04; 4J100/AC22P; 4J100/AC23P; 4J100/AC24P; 4J100/AC26P; 4J100/AC27P; 4J100/AC28P; 4J100/AC30P; 4J100/AC31P; 4J100/AE09P; 4J100/AE18P; 4J100/AE56P; 4J100/BA04P; 4J100/BB18P; 4J100/CA01; 4J100/CA04; 4J100/CA05; 4J100/FA03; 4J100/FA04; 4J100/FA20

OS MARPAT 138:90650

AB The emulsifiers are comprised of imide anions that have good surface activity while being phys. and chemical stable during their use as emulsifiers. The emulsifiers of the present invention are expected to gradually degrade in the environment and will likely more rapidly bioeliminate than ammonium **perfluorooctanoate**. In addition, the emulsifiers can be produced from lower cost intermediates, such as C4F9COF and C4F9SO2F. Thus, bis(**perfluorobutanesulfonyl**)imide was prepared from triethylammonium bis(**perfluorobutanesulfonyl**)imide intermediate (preparation given) and used under an ammonium salt in the polymerization of **fluoroolefins**.

ST emulsion polymn **fluoroolefin** emulsifying agent **fluoro** imide salt

IT **Emulsifying agents**

(manufacture of imide salts as emulsifiers for polymerization of **fluoroolefins**)

IT **Fluoropolymers, preparation**

RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)

(manufacture of imide salts as emulsifiers for polymerization of **fluoroolefins**)

IT 119229-99-1P 129318-48-5P 482630-30-8P.

RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)

(emulsifiers; manufacture of imide salts as emulsifiers for polymerization of **fluoroolefins**)

IT 81189-15-3 482630-27-3 482630-28-4 482630-29-5 482630-31-9  
 482630-32-0 482630-33-1 482630-34-2 482630-35-3

RL: MOA (Modifier or additive use); USES (Uses)  
(emulsifiers; manufacture of imide salts as emulsifiers for polymerization of  
**fluoroolefins**)

IT 9011-17-0P, **Hexafluoropropylene-vinylidene fluoride**  
copolymer 25067-11-2P, **Hexafluoropropylene-**  
**tetrafluoroethylene** copolymer

RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP  
(Preparation); USES (Uses)

(manufacture of imide salts as emulsifiers for polymerization of  
**fluoroolefins**)

IT 39847-39-7P, Bis(**perfluorobutanesulfonyl**)imide 233278-21-2P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)

(manufacture of imide salts as emulsifiers for polymerization of  
**fluoroolefins**)

IT 121-44-8, Triethylamine, reactions 375-72-4,

**Perfluorobutanesulfonyl fluoride**

RL: RCT (Reactant); RACT (Reactant or reagent)

(manufacture of imide salts as emulsifiers for polymerization of  
**fluoroolefins**)

RE. CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Minnesota Mining & Mfg; WO 9819988 A 1998 HCAPLUS

L13 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:238068 HCAPLUS

DN 132:266766

ED Entered STN: 13 Apr 2000

TI Straight-chain and branched **perfluoroalkyl** halides and  
derivatives, their preparation, **fluoropolymers**, and use as oil-  
and water-repellant treatment agents for surfaces

IN Behr, Frederick E.; Dams, Rudolf J.; Dewitte, Johan E.; Hagen,  
Donald F.

PA 3M Innovative Properties Company, USA

SO U.S., 22 pp., Cont.-in-part of U.S. Ser. No. 723,049, abandoned.  
CODEN: USXXAM

DT Patent

LA English

IC ICM C08F018-20

INCL 526245000

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 40, 46

FAN. CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6048952	A	20000411	US 1997-794798	19970204
	JP 2002138078	A2	20020514	JP 2001-204928	19920710
	US 6365769	B1	20020402	US 2000-504483	20000215
PRAI	US 1991-728184	B1	19910710		
	US 1994-314939	B3	19940929		
	US 1995-476954	B1	19950607		
	US 1996-723049	B2	19960930		
	JP 1992-183345	A3	19920710		
	US 1997-794798	A3	19970204		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 6048952	ICM	C08F018-20
	INCL	526245000
US 6048952	NCL	526/245.000; 528/044.000; 528/288.000; 528/310.000; 528/403.000; 528/405.000
	ECLA	C07C017/00+19/14; C07C017/00+19/01; C07C017/00+19/16; C07C017/25+21/18; C07C051/285+53/21; C07C069/653; C08G018/08D2E2; C08G018/28D8C; C08G018/80H4F
US 6365769	NCL	560/147.000; 560/152.000; 560/223.000; 562/113.000; 562/605.000; 564/209.000; 568/683.000; 568/842.000
	ECLA	C07C017/00+19/16; C07C053/21; C07C069/653; C07C303/24; C07C303/32; C07C319/02; C07C319/14; C07C319/18; C07D303/08; C08G018/08D2E2; C08G018/09G; C08G018/28D8C; C08G018/80H4F; C08G063/682; C07C017/00+19/01;

C07C017/00+19/14; C07C017/25+21/18; C07C019/10;  
C07C019/14; C07C019/16; C07C031/40; C07C051/285+53/21

- AB Aqueous treating agents for a substrate comprise compds. with pendant saturated **perfluoroalkyl** groups, where some of the **perfluoroalkyl** groups are straight chain and some are branched chain; and applying the polymer to the substrate; where 60-90% of the **perfluoroalkyl** groups are straight chain and .apprx.10-40% of the **perfluoroalkyl** groups are branched chain.
- ST **perfluoroalkyl** halide surface treatment agent; straight branched **perfluoroalkyl** halide mixt; **fluoropolymer** **perfluoroalkyl** prepn use; oil waterproofing agent fabric
- IT **Surfactants**  
(anionic-nonionic; straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT Textiles  
(cotton-polyester, substrate; straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT Polyurethanes, uses  
Polyurethanes, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(**fluorine**-containing, **perfluoroalkyl** group-containing; straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT Polyamides, uses  
Polycarbodiimides  
Polyethers, uses  
Polyolefins  
Polyurethanes, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(**perfluoroalkyl** group-containing; straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT **Fluoropolymers**, uses  
**Fluoropolymers**, uses  
**Fluoropolymers**, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polyurethane-, **perfluoroalkyl** group-containing; straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT Oilproofing agents  
Polymerization  
Textiles  
Water-resistant materials  
(straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT Carpets  
Ceramics  
Paper  
(substrate; straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT Glass, miscellaneous  
Metals, miscellaneous  
Plastics, miscellaneous  
RL: MSC (Miscellaneous)  
(substrate; straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT 27854-31-5P 27905-45-9P 30389-25-4P 38436-14-5P 38436-18-9P  
38565-53-6P 52591-27-2P 81190-28-5P 150940-84-4P  
RL: IMF (Industrial manufacture); PREP (Preparation)  
(straight-chain and branched **perfluoroalkyl** halides and derivs. for use as oil- and water-repellent treatment agents for fabrics and other surfaces)
- IT 423-60-9P, **Perfluorooctanesulfonyl** chloride 423-62-1P,

**Perfluorodecyl iodide** 678-39-7P 865-86-1P 1693-71-6P,  
Triallyl borate 2043-47-2P 2043-54-1P 34143-74-3P 34451-25-7DP,  
reaction products with propargyl alc., phosphate esters, ammonium salts  
34451-28-0P 80233-96-1P 133299-39-5P 150940-83-3P 218462-37-4P  
218462-40-9P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT  
(Reactant or reagent)

(straight-chain and branched **perfluoroalkyl** halides and  
derivs. for use as oil- and water-repellent treatment agents for  
fabrics and other surfaces)

- IT 107-19-7DP, Propargyl alcohol, reaction products with  
**perfluoroalkylethanethiols**, phosphate esters, ammonium salts  
107-19-7DP, Propargyl alcohol, reaction products with  
**perfluoroalkylthiols** and PAPI 9003-11-6DP, mono[ $\omega$ -[(**heptadecafluorodecyl**)thio]alkyl] ethers 9016-87-9DP, PAPI,  
reaction products with **perfluoroalkyl** alcs. 27905-45-9DP,  
reaction products with PAPI 34143-74-3DP, reaction products with  
methoxymethylmelamines, propargyl alc. and PAPI 34451-25-7DP, reaction  
products with propargyl alc., phosphate esters, ammonium salts  
54949-95-0P 58228-15-2P 62097-34-1DP, Ethylene glycol-PAPI copolymer,  
reaction products with **perfluoroalkylethanols** 62880-96-0P  
62880-97-1P 63225-57-0P 99332-32-8P 118570-75-5P 149759-83-1P  
150940-87-7P 150944-46-0P 150944-47-1P 150953-92-7P 150956-37-9P  
189398-01-4DP, phosphate esters, ammonium salts 218462-55-6P  
218462-56-7P 218462-57-8P 218462-58-9DP, reaction products with  
propane sultone 218462-59-0P 218462-60-3P 218462-61-4P  
218462-62-5P 218462-64-7P 218462-65-8DP, reaction products with  
propane sultone 218462-66-9P 218462-67-0P 218462-68-1P  
218462-69-2P 218605-22-2P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material  
use); PREP (Preparation); USES (Uses)

(straight-chain and branched **perfluoroalkyl** halides and  
derivs. for use as oil- and water-repellent treatment agents for  
fabrics and other surfaces)

- IT 62-56-6, Thiourea, reactions 74-85-1, Ethene, reactions 107-15-3,  
Ethylene diamine, reactions 107-18-6, 2-Propen-1-ol, reactions  
109-55-7 307-51-7, **Perfluorodecanesulfonyl fluoride**  
814-68-6, Acryloyl chloride 3089-11-0D, Hexamethoxymethyl melamine,  
reaction products with **perfluoroalkylethylthiols** 6915-15-7,  
Malic acid 7553-56-2, Iodine, reactions 10043-35-3, Boric acid,  
reactions 15214-89-8 32779-61-6 40630-30-6 55591-23-6,  
**Perfluorohexanesulfonyl chloride**

RL: RCT (Reactant); RACT (Reactant or reagent)

(straight-chain and branched **perfluoroalkyl** halides and  
derivs. for use as oil- and water-repellent treatment agents for  
fabrics and other surfaces)

RE.CNT 53. THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ahlbrecht; US 2764602 1956 HCAPLUS
- (2) Ahlbrecht; US 2803656 1957 HCAPLUS
- (3) Anon; GB 904263 1962 HCAPLUS
- (4) Anon; EP 0142041 A1 1985 HCAPLUS
- (5) Anon; JP 61209286 1986 HCAPLUS
- (6) Anon; JP 6238419 1987
- (7) Anon; EP 0275771 1988 HCAPLUS
- (8) Anon; GB 2199828 1988 HCAPLUS
- (9) Anon; JP 6445411 1989
- (10) Anon; JP 532712 1993
- (11) Anon; 3M Company trade bulletin 98-0211-2213-4(38.3) BPH 1988
- (12) Anon; Journal of Fluorine Chemistry 1989, V43(2), P291
- (13) Anon; The Journal of Organic Chemistry 1958, V23, P1166
- (14) Anon; The Journal of Organic Chemistry 1988, V53(24), P5714
- (15) Banitt; US 3532674 1970 HCAPLUS
- (16) Banks, R; Organofluorine Chemicals and their Industrial Applications 1979,  
P213
- (17) Berger; US 4359096 1982
- (18) Bernett, M; J Phys Chem 1967, V71, P2075 HCAPLUS
- (19) Billenstein; US 4167639 1979 HCAPLUS
- (20) Brice; US 2732398 1956 HCAPLUS
- (21) Brown; US 2759019 1956 HCAPLUS

(22) Brown; US 2950317 1960 HCAPLUS  
 (23) Bultman; US 4484990 1984 HCAPLUS  
 (24) Caporiccio; US 5350878 1994 HCAPLUS  
 (25) Chang; US 3540126 1970 HCAPLUS  
 (26) Chang; US 4540497 1985 HCAPLUS  
 (27) Chang; US 4668406 1987 HCAPLUS  
 (28) Day; US 3283012 1966 HCAPLUS  
 (29) Dear; US 4158672 1979 HCAPLUS  
 (30) Diesslin; US 2567011 1951 HCAPLUS  
 (31) Falk; US 5091550 1992 HCAPLUS  
 (32) Falk; US 5132445 1992 HCAPLUS  
 (33) Feiring; US 5260492 1993 HCAPLUS  
 (34) Feiring; US 5326917 1994 HCAPLUS  
 (35) Francen; US 3562156 1971  
 (36) Fuchikami; US 5151535 1992 HCAPLUS  
 (37) Guenthner; US 3398182 1968 HCAPLUS  
 (38) Hager; US 3532659 1970 HCAPLUS  
 (39) Heine; US 3094547 1963  
 (40) Husted; US 2666797 1954 HCAPLUS  
 (41) Husted; US 2691043 1954 HCAPLUS  
 (42) Katsushima; US 3499940 1970  
 (43) Katsushima; US 3525758 1970  
 (44) Katsushima; US 3919361 1975 HCAPLUS  
 (45) Krahler; US 4489006 1984 HCAPLUS  
 (46) Landucci; US 4024178 1977 HCAPLUS  
 (47) Lore; US 4127711 1978 HCAPLUS  
 (48) Park, J; Free-Radical Catalyzed Addition of Unsaturated Alcohols to  
 Perhaloalkanes 1961, P2089 HCAPLUS  
 (49) Pavlik; US 3420877 1969 HCAPLUS  
 (50) Schwenk; US 4219681 1980 HCAPLUS  
 (51) Simons; US 2519983 1950 HCAPLUS  
 (52) Stern; US 4606737 1986 HCAPLUS  
 (53) Tiers; US 2972638 1961 HCAPLUS

L13 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1999:12326 HCAPLUS

DN 130:83186

ED Entered STN: 08 Jan 1999

TI **Perfluoroalkyl** halides and derivatives for surface treatment

IN Behr, Frederick E.; Dams, Rudolf J.; Dewitte, Johan E.; Hagen,  
 Donald F.

PA Minnesota Mining & Manufacturing Company, USA

SO U.S., 22 pp., Cont.-in-part of U.S. Ser. No. 489,094, abandoned.

CODEN: USXXAM

DT Patent

LA English

IC ICM C08F018-20

INCL 526245000

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)

Section cross-reference(s): 38, 40, 46

FAN. CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5852148	A	19981222	US 1997-794828	19970204
	JP 2002138078	A2	20020514	JP 2001-204928	19920710
PRAI	US 1991-728184	B1	19910710		
	US 1994-314939	B3	19940929		
	US 1995-489094	B2	19950609		
	JP 1992-183345	A3	19920710		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 5852148	ICM	C08F018-20
	INCL	526245000
US 5852148	NCL	526/245.000; 428/500.000; 526/243.000
	ECLA	C07C017/00+19/14; C07C051/285+53/21; C08G018/08D2E2; C08G018/09G; C08G018/28D8C; C08G018/80H4F; C07C017/00+19/01; C07C017/00+19/16; C07C017/25+21/18

AB A method for treating a substrate, comprises: providing a substrate;  
 providing a polymer comprising a plurality of pendant saturated

**perfluoroalkyl** groups, wherein some of the **perfluoroalkyl** groups are straight chain and some are branched chain; and applying the polymer to the substrate; wherein 65-85% of the **perfluoroalkyl** groups are straight chain and about 15 to about 35% of the **perfluoroalkyl** groups are branched chain. These mixts. contain some compds. with a straight **perfluoroalkyl** group and some with a branched **perfluoroalkyl** group. Methods of preparation and use are also described.

ST **perfluoroalkyl** halide surface treatment agent

IT **Surfactants**

(anionic-nonionic; **perfluoroalkyl** halides and derivs. for surface treatment)

IT Polyurethanes, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(**fluorine**-containing, **perfluoroalkyl** group-containing;  
**perfluoroalkyl** halides and derivs. for surface treatment)

IT Polyamides, uses

Polycarbodiimides

Polyethers, uses

Polyolefins

Polyurethanes, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(**perfluoroalkyl** group-containing; **perfluoroalkyl**  
halides and derivs. for surface treatment)

IT Oilproofing agents

Polymerization

Textiles

Water-resistant materials

(**perfluoroalkyl** halides and derivs. for surface treatment)

IT **Fluoropolymers**, uses

**Fluoropolymers**, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(polyurethane-, **perfluoroalkyl** group-containing;  
**perfluoroalkyl** halides and derivs. for surface treatment)

IT Carpets

Ceramics

Paper

(substrate; **perfluoroalkyl** halides and derivs. for surface treatment)

IT Glass, miscellaneous

Metals, miscellaneous

Plastics, miscellaneous

RL: MSC (Miscellaneous)

(substrate; **perfluoroalkyl** halides and derivs. for surface treatment)

IT 27854-31-5P 27905-45-9P 30389-25-4P 38436-14-5P 38436-18-9P

38565-53-6P 52591-27-2P 81190-28-5P 150940-84-4P

RL: IMF (Industrial manufacture); PREP (Preparation)

(**perfluoroalkyl** halides and derivs. for surface treatment)

IT 423-60-9P, **Perfluorooctanesulfonyl** chloride 423-62-1P,

**Perfluorodecyl iodide** 678-39-7P 865-86-1P 1693-71-6P,

Triallyl borate 2043-47-2P 2043-54-1P 34143-74-3P 34451-25-7P

34451-28-0P 80233-96-1P 133299-39-5P 150940-83-3P 218462-37-4P

218462-40-9P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(**perfluoroalkyl** halides and derivs. for surface treatment)

IT 107-19-7DP, Propargyl alcohol, reaction products with

**perfluoroalkylethanethiols**, phosphate esters, ammonium salts

107-19-7DP, Propargyl alcohol, reaction products with

**perfluoroalkylthiols** and PAPI 9003-11-6DP, mono[ $\omega$ -[(

**heptadecafluorodecyl**)thio]alkyl] ethers 9016-87-9DP, PAPI,

reaction products with **perfluoroalkyl** alcs. 27905-45-9DP,

reaction products with PAPI 34143-74-3DP, reaction products with

methoxymethylmelamines, propargyl alc. and PAPI 34451-25-7DP, reaction

products with propargyl alc., phosphate esters, ammonium salts

54949-95-0P 58228-15-2P 62097-34-1DP, Ethylene glycol-PAPI copolymer,

reaction products with **perfluoroalkylethanols** 62880-96-0P

62880-97-1P 63225-57-0P 99332-32-8P 118570-75-5P 149759-83-1P

150940-87-7P 150944-46-0P 150944-47-1P 150953-92-7P 150956-37-9P

189398-01-4DP, phosphate esters, ammonium salts 218462-55-6P  
 218462-56-7P 218462-57-8P 218462-58-9DP, reaction products with  
 propane sultone 218462-59-OP 218462-60-3P 218462-61-4P  
 218462-62-5P 218462-64-7P 218462-65-8DP, reaction products with  
 propane sultone 218462-66-9P 218462-67-OP 218462-68-1P  
 218462-69-2P 218605-22-2P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(perfluoroalkyl halides and derivs. for surface treatment)

IT 62-56-6, Thiourea, reactions 74-85-1, Ethene, reactions 107-15-3,  
 Ethylene diamine, reactions 107-18-6, 2-Propen-1-ol, reactions  
 109-55-7 307-51-7, **Perfluorodecanesulfonyl fluoride**  
 814-68-6, Acryloyl chloride 3089-11-OD, Hexamethoxymethyl melamine,  
 reaction products with **perfluoroalkylethylthiols** 6915-15-7,  
 Malic acid 7553-56-2, Iodine, reactions 10043-35-3, Boric acid,  
 reactions 15214-89-8 32779-61-6 40630-30-6 55591-23-6,

**Perfluorohexanesulfonyl chloride**

RL: RCT (Reactant); RACT (Reactant or reagent)

(perfluoroalkyl halides and derivs. for surface treatment)

RE.CNT 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ahlbrecht; US 2764602 1956 HCAPLUS
- (2) Ahlbrecht; US 2803656 1957 HCAPLUS
- (3) Anon; GB 904263 1962 HCAPLUS
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 Perhaloalkanes 1961, P2089 HCAPLUS

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L13 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1996:476619 HCAPLUS  
 DN 125:117326  
 ED Entered STN: 13 Aug 1996  
 TI Manufacture of carbodiimides as extenders for durable water-repellent compositions containing **fluoroorganic** chemicals  
 IN **Audenaert, Frans A.**; Lens, Hugo R.  
 PA Minnesota Mining and Manufacturing Co., USA  
 SO Eur. Pat. Appl., 22 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 IC ICM C07C267-00  
 ICS C07C271-20; D06M013-432; D06M015-277  
 CC 40-9 (Textiles and Fibers)  
 Section cross-reference(s): 23, 43, 56, 57, 58

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 713863	A1	19960529	EP 1994-118500	19941124
EP 713863	B1	20000426		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
US 5817249	A	19981006	US 1995-546886	19951023
JP 08325220	A2	19961210	JP 1995-298450	19951116
CN 1131147	A	19960918	CN 1995-119341	19951117
PRAI EP 1994-118500	A	19941124		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 713863	ICM	C07C267-00
	ICS	C07C271-20; D06M013-432; D06M015-277
EP 713863	ECLA	C04B041/46; C07C267/00; C07C271/20; C09K003/18; C14C009/00; D06M013/432; D06M015/277
US 5817249	NCL	252/008.610; 252/008.810; 252/008.910; 427/212.000; 427/216.000; 427/221.000; 427/222.000; 524/805.000; 524/839.000; 524/840.000; 525/123.000; 525/129.000; 525/130.000; 525/131.000
	ECLA	C04B041/46; C07C267/00; C07C271/20; C09K003/18; C14C009/00; D06M013/432; D06M015/277
AB		Carbodiimide extenders manufactured by reacting isocyanates and monofunctional alcs., specifically C8-60 branched aliphatic alc. in non-reactive solvents in the presence of a suitable catalyst are claimed. The isocyanates and the monofunctional alcs., except for the OH group, are free from isocyanate-reactive H atoms. H2O-repellent compns., useful for textiles, fibers, leather, paper, plastic, metals, glass, concrete, etc., comprising a F-containing oil which is a copolymer of a <b>fluoroalkyl</b> (meth)acrylate RfZ02CCR1:CH2 [Rf = <b>fluoroaliph.</b> radical; Z = C1-10 alkylene, CH2CH(OR2)CH2; R1 = H, Me; R2 = H, Ac] and a ( <b>fluoroalkylsulfonamido</b> )alkyl (meth)acrylate RfS02NR3Z102CR1:CH2 (Rf, R1 as above; R3 = H, C1-20 alkyl; Z1 = C1-20 alkylene) as H2O-repellent and a hydrocarbon carbodiimide compound are also claimed. A typical title composition contained an aqueous emulsion of FC 3531 (weakly cationic emulsion <b>fluoropolymer</b> ) and a carbodiimide extender obtained by reacting MDI with Prisorine 3515 (Me-branched isostearyl alc.) in 2:1 mol. ratio.
ST		carbodiimide manuf water repellent extender; MDI addn isostearyl alc water repellent; <b>fluoroalkyl</b> acrylate copolymer water repellent
IT	<b>Surfactants</b>	(additives in water-repellent compns.; manufacture of carbodiimides as extenders for durable water-repellent compns. containing <b>fluoroorg</b> chems.)
IT	<b>Carbodiimides</b>	RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

- (extenders; manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT Carpets  
Concrete  
Leather  
Paper  
Water-resistant materials  
Wood  
(manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT Glass, oxide  
Metals, miscellaneous  
Plastics  
Rayon, miscellaneous  
Stone  
RL: MSC (Miscellaneous)  
(manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT Alcohols, uses  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(C12-16-branched, Isofol 14T, reaction products with isocyanates; manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT Alcohols, uses  
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(aliphatic, C8-60, reaction products with isocyanates, extenders; manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT Textiles  
(cotton, manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT Textiles  
(linen, manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT Textiles  
(nonwoven, manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT Amines, uses  
Polyoxyalkylenes, uses  
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(reaction products, with isocyanates, extenders; manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT 73018-93-6  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(additive in water-repellent composition; manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)
- IT 75-13-8DP, Isocyanic acid, esters, reaction products with branched C8-60 alcs. 100-37-8DP, reaction products with isocyanates 101-68-8DP, reaction products with branched fatty alcs. 104-76-7DP, 2-Ethylhexanol, reaction products with isocyanates 2425-77-6DP, Isofol 16, reaction products with isocyanates 2425-77-6DP, Guerbitol 16, reaction products with isocyanates 5333-42-6DP, reaction products with isocyanates 9004-74-4DP, Polyethylene glycol methyl ether, reaction products with isocyanates 9016-87-9DP, Voranate M 220, reaction products with branched fatty alcs. 26471-62-5DP, TDI, reaction products with branched fatty alcs. 27458-93-1DP, Prisorine 3515, reaction products with MDI 58670-89-6DP, Isofol 24, reaction products with isocyanates 156930-12-0DP, Jeffamine M 715, reaction products with isocyanates 179606-94-1DP, Guerbitol 18, reaction products with isocyanates 179606-95-2DP, Guerbitol 20, reaction products with isocyanates 179607-29-5DP, Isofol 18T, reaction products with isocyanates  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(manufacture of carbodiimides as extenders for durable water-repellent

compns. containing **fluoroorg.** chems.)  
 IT 138789-49-8, FC 461 141910-75-0, FC 217 179606-89-4, FC 3531  
 179606-90-7, FX 889 179607-21-7, Reaknitt DFL  
 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
 (manufacture of carbodiimides as extenders for durable water-repellent compns. containing **fluoroorg.** chems.)

L13 ANSWER 9 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1995:829912 HCAPLUS  
 DN 123:343448  
 ED Entered STN: 04 Oct 1995  
 TI **Fluorosurfactants** for paint and coatings  
 AU Witte, J. De; Piessens, G.; Dams, R.  
 CS CHEMICAL GROUP, 3M BELGIUM, Belg.  
 SO FATIPEC Congress (1994), 22nd(Vol. 2), 169-76  
 CODEN: FAPVAP; ISSN: 0430-2222  
 PB Federation d'Associations de Techniciens des Industries des Peintures, Vernis, Emaux et Encres d'Imprimerie de l'Europe Continentale  
 DT Journal  
 LA English  
 CC 42-5 (Coatings, Inks, and Related Products)  
 AB **Fluorosurfactants** are amphiphilic materials consisting of a hydrophobic and oleophobic **perfluorinated** organic segment and a hydrophilic headgroup. This **perfluorinated** segment makes them extremely effective and efficient in lowering the surface tension of organic or aqueous systems. **Fluorosurfactants** can help to avoid typical paint and coating deficiencies such as crater formation, orange peeling, leveling and spreading, dewetting and so on.  
 ST **fluorosurfactant** paint coating  
 IT Coating materials  
     **Surfactants**  
     (**fluorosurfactants** for paint and coatings)  
 IT Organic compounds, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
     (**fluoro, fluorosurfactants** for paint and coatings)  
 IT Coating materials  
     (paints, **fluorosurfactants** for paint and coatings)

L13 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 1995:708307 HCAPLUS  
 DN 123:116285  
 ED Entered STN: 29 Jul 1995  
 TI **Fluorinated** aliphatic radical-containing anionic sulfonamides as surfactants  
 IN Dams, Rudolf J.  
 PA Minnesota Mining and Manufacturing Co., USA  
 SO PCT Int. Appl., 29 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM C07C311-09  
 ICS C07D295-22; C07F007-08; C07C323-52; C11D001-12; C11D001-10  
 CC 46-3 (Surface Active Agents and Detergents)  
 Section cross-reference(s): 23, 28

FAN. CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9413634	A1	19940623	WO 1993-US8863	19930921
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6201122	B1	20010313	US 1992-986648	19921208
	EP 669910	A1	19950906	EP 1993-922704	19930921
	EP 669910	B1	19980311		
	R: DE				
PRAI	US 1992-986648	A	19921208		
	WO 1993-US8863	W	19930921		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 9413634	ICM	C07C311-09

ICS C07D295-22; C07F007-08; C07C323-52; C11D001-12;  
C11D001-10  
US 6201122 NCL 544/383.000; 560/150.000; 562/106.000; 562/556.000  
ECLA C07C311/09; C07C323/52; C07D295/22C2; C07F007/08D4H4;  
C11D001/00C

AB Low-foaming surfactants such C8F17SO2NHCH2CH2NHCH2CH2CONHMe2CH2SO3K (I),  
C8F17SO2NHCH2CH2NHCH2CH2CO2Na, C8F17SO2ZCH2CH2CONHMe2CH2SO3K (Z =  
piperazine-1,4-diyl), an ethylene oxide-propylene oxide copolymer containing 1  
C8F17SO2NHCHMeCH2 end group and 1 CH2CHMeNHCH2CH2CONHMe2CH2SO3K end  
group, C8F17SO2NEtCH2CH2SCH (CO2NH4)CH2CO2NH4, and  
C4F9SO2NH(CH2)3SiMe2OSiMe2(CH2)3NHCH2CH2CONHMe2CH2SO3K are prepared by the  
Michael addition of a **fluoroalkyl** group-containing compound to an  
ethylenic compound. The Michael addition of C8F17SO2NHCH2CH2NH2 to K  
2-acrylamido-2-methylpropanesulfonic acid gave I which formed 0.01% and  
0.05% aqueous solns. showing surface tension 18.3 and 17.1 dynes/cm, resp.

ST **fluoroalkylsulfonamide** deriv anionic surfactant; sulfonate  
**fluoroalkylsulfonamido** deriv surfactant; carboxylate  
**fluoroalkylsulfonamido** deriv surfactant;  
acrylamidomethylpropanesulfonic reaction sulfonamide surfactant; foam redn  
anionic surfactant **fluoroalkylsulfonamide**

IT Sulfonamides  
RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
(anionic and **fluoroalkyl** group-containing; preparation of  
surface-active low-foaming)

IT Carboxylic acids, preparation  
Sulfonic acids, preparation  
RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
(**fluoroalkylsulfonamido** group-containing; preparation of  
surface-active low-foaming)

IT **Surfactants**  
(anionic, **fluoroalkylsulfonamido** group-containing; preparation of  
low-foaming)

IT 13406-94-5, N-(2-Aminoethyl)**perfluorooctanesulfonamide**  
113584-32-0 165527-52-6 165527-53-7 166582-88-3  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(addition reaction with ethylenic compds. containing anionic groups)

IT 6915-18-0, 2-Butenedioic acid 7446-81-3 52825-28-2  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(addition reaction with **fluoroalkylsulfonamido** group-containing  
amines)

IT 165527-27-5P 165527-28-6P 165527-29-7P 165527-30-0P 165527-31-1P  
165527-32-2P 165527-33-3P 165527-34-4P 165527-35-5P 165527-36-6P  
165527-37-7P 165527-38-8P 165527-39-9P 165527-40-2P 165527-41-3P  
165527-42-4P 165527-43-5P 165527-44-6P 165527-45-7P 165527-46-8P  
165527-47-9P 165527-48-0P 165527-49-1P 165527-50-4P 165527-51-5P  
166338-13-2P 166582-84-9P 166582-85-0P 166582-86-1P 166582-87-2P  
RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)  
(surfactants; preparation of low-foaming)

L13 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1994:136059 HCAPLUS

DN 120:136059

ED Entered STN: 19 Mar 1994

TI **Perfluoroalkyl** halides and derivatives as precursors for oil and  
water repellants and surfactants

IN Behr, Frederick E.; Dams, Rudolf J.; DeWitte, Johan E.; Hagen,  
Donald F.

PA Minnesota Mining and Manufacturing Co., USA

SO Can. Pat. Appl., 67 pp.

CODEN: CPXXEB

DT Patent

LA English

IC ICM C08L027-12

ICS C09D004-00; C09D127-12; C09D175-04; C08L075-04

CC 37-2 (Plastics Manufacture and Processing)

Section cross-reference(s): 23, 40, 46

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CA 2071596	AA	19930111	CA 1992-2071596	19920618

EP 526976	A1	19930210	EP 1992-305710	19920622
EP 526976	B1	19970115		
R: BE, CH, DE, FR, GB, IT, LI, NL				
JP 05345732	A2	19931227	JP 1992-183345	19920710
JP 3231844	B2	20011126		
JP 2002138078	A2	20020514	JP 2001-204928	19920710
PRAI US 1991-728184	A	19910710		
JP 1992-183345	A3	19920710		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
CA 2071596	ICM	C08L027-12
	ICS	C09D004-00; C09D127-12; C09D175-04; C08L075-04
EP 526976	ECLA	C07C017/00+19/14; C07C017/00+19/01; C07C017/00+19/16; C07C017/25+21/18; C07C019/10; C07C019/14; C07C019/16; C07C031/40; C07C051/285+53/21; C07C053/21; C07C069/653; C07C303/24; C07C303/32; C07C319/02; C07C319/14; C07C319/18; C07D303/08; C08G018/08D2E2; C08G018/09G; C08G018/28D8C; C08G018/80H4F; C08G063/682

OS MARPAT 120:136059

AB The title compds. comprise a mixture of straight and branched **perfluoroalkyl** groups bonded to Cl, Br, or I through a F-free alkylene group. **Perfluorodecyltetrahydroiodide** (prepared from **perfluorosulfonyl fluoride**, 40% straight and 60% branched, treated first with I, then with C2H4) was derivatized to thiol functionality by treatment with thiourea in EtOH to give **perfluorodecyltetrahydrothiol** (I). I was added to a reaction mixture containing hexamethoxymethylmelamine to give a I-melamine condensate (II, 1:4 mol ratio). A 50/50 polyester/cotton fabric blend was treated with an emulsion of II at 0.3%, dried and cured at 150°, to give a fabric with oil resistance (AATCC 118-1975) 5 and 5 after 1 dry cleaning, vs. 3 and 2, resp., for a precursor **perfluorodecyltetrahydroiodide** having all straight chain **perfluoroalkyl** groups.

ST **perfluoroalkyl** halide prepn deriv;**perfluorodecyltetrahydroiodide** reaction thiourea; melamine**perfluorothiol** condensate treatment fabric; water repellent**perfluoroalkyl** halide deriv; oil repellent **perfluoroalkyl**halide deriv; surfactant **perfluoroalkyl** halide deriv

IT Water-resistant materials

(fluorochem. compds. containing **perfluoroalkyl** groups, for textiles)IT **Surfactants**

(amphoteric, fluorochem. compds. containing linear and branched

**perfluoroalkyl** groups, preparation of)IT **Surfactants**

(anionic, fluorochem. compds. containing linear and branched

**perfluoroalkyl** groups, preparation of)

IT Textiles

(cotton-polyester, water repellent agents for, chlorochem. intermediate as, containing **perfluoroalkyl** groups)

IT Polyoxyalkylenes, preparation

RL: PREP (Preparation)

(fluorine-containing, containing linear and branched

**perfluoroalkyl** groups, preparation of, for manufacture of nonionic surfactants)IT **Surfactants**

(nonionic, fluorochem. compds. containing linear and branched

**perfluoroalkyl** groups, preparation of)IT **Fluoropolymers**

RL: PREP (Preparation)

(polyoxyalkylene-, containing linear and branched **perfluoroalkyl**

groups, preparation of, for manufacture of nonionic surfactants)

IT 109-55-7 111-40-0, Diethylene triamine 112-24-3, Triethylene tetramine

RL: USES (Uses)

(linear and branched, Michael addition of, with

**perfluoroalkyltetrahydroacrylate**)

IT 678-39-7P

RL: PREP (Preparation)

(linear and branched, preparation and conversion of to acrylate)

IT 865-86-1P 2043-47-2P 27854-31-5P 27905-45-9P 30389-25-4P

- 34143-74-3P 34451-25-7P 34451-28-0P 38565-53-6P 52591-27-2P  
 80233-96-1P 81190-28-5P  
 RL: PREP (Preparation)  
 (linear and branched, preparation of)
- IT 150944-47-1P  
 RL: PREP (Preparation)  
 (linear and branched, preparation of, as anionic nonionic surfactant)
- IT 9003-11-6DP, thioethers with **tetrahydroperfluorodecanethiol**  
 34143-74-3DP, reaction products with ethylene oxide-propylene oxide  
 copolymer 58228-15-2P 150997-16-3P  
 RL: PREP (Preparation)  
 (linear and branched, preparation of, as nonionic surfactant)
- IT 150909-45-8P 150909-46-9P 150940-87-7P  
 RL: PREP (Preparation)  
 (linear and branched, preparation of, as surfactant)
- IT 107-19-7DP, 2-Propyn-1-ol, reaction products with  
**perfluorooctyltetrahydrothiol**, urethane acrylate derivative  
 678-39-7DP, oligomeric urethane derivative 3089-11-ODP, Hexamethoxymethyl  
 melamine, reaction product with **perfluorooctyltetrahydrothiol**  
 9016-87-9DP, Polymethylene polyphenylene isocyanate, reaction product with  
**perfluorooctyltetrahydro** alc. 26471-62-5DP, TDI, reaction  
 product with propargyl alc. adduct with **perfluorooctyltetrahydrothiol**  
 27905-45-9DP, urethane acrylate derivative 34143-74-3DP, reaction  
 products with propargyl alc., urethane acrylate derivative  
 RL: PREP (Preparation)  
 (linear and branched, preparation of, as treatment agent for fibers for  
 water resistance)
- IT 2043-53-0P 2043-54-1P 2043-55-2P 2043-57-4P  
 RL: PREP (Preparation)  
 (linear and branched, preparation of, derivs. from)
- IT 9004-74-4DP, Polyethylene glycol methyl ether, Michael adduct with  
**perfluoroalkyltetrahydrothiol** 54949-95-0P 149759-83-1P  
 150940-85-5DP, Michael adduct with **perfluoroalkyltetrahydrothiol**  
 150944-46-0P 150953-92-7DP, Michael adduct with  
**perfluoroalkyltetrahydrothiol** 150956-33-5P  
 RL: PREP (Preparation)  
 (linear and branched, preparation of, for surfactant)
- IT 110-17-8DP, 2-Butenedioic acid (E)-, reaction products with  
**perfluorobutylethyl** acrylate and AMPS 111-40-ODP, reaction  
 products with **perfluorobutylethyl** acrylate and AMPS  
 112-24-3DP, reaction products with **perfluorobutylethyl** acrylate  
 and AMPS 52591-27-2DP, reaction products with ethylenediamine and AMPS  
 63225-57-0P 93776-20-6P 93857-44-4P 148390-66-3DP, reaction products  
 with **perfluorobutylethyl** acrylate and ethylenediamine  
 149790-22-7P 150940-86-6P 150953-94-9P 150956-34-6P 150956-35-7P  
 150956-36-8P 150956-37-9P 151030-75-ODP, phosphate ester, ammonium  
 salts 153326-51-3DP, phosphate ester, ammonium salts  
 RL: PREP (Preparation)  
 (linear and branched, preparation of, for surfactants)
- IT 423-60-9, **Perfluorooctanesulfonyl** chloride 423-62-1,  
**Perfluorodecyl iodide** 32779-61-6 38436-14-5 40630-30-6  
 55591-23-6, **Perfluorohexanesulfonyl** chloride 133299-39-5  
 150940-83-3 150940-84-4  
 RL: USES (Uses)  
 (linear and branched, reaction of, with ethylene)
- IT 307-35-7, **Perfluorooctanesulfonyl fluoride** 307-51-7,  
**Perfluorodecanesulfonyl fluoride** 375-72-4,  
**Perfluorobutanesulfonyl fluoride** 423-50-7,  
**Perfluorohexanesulfonyl fluoride**  
 RL: USES (Uses)  
 (linear and branched, reaction of, with iodine and ethylene)
- IT 74-85-1, Ethylene, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (linear and branched, reaction of, with **perfluoroalkyl**  
 iodide)
- IT 814-68-6, Acryloyl chloride  
 RL: USES (Uses)  
 (linear and branched, reaction of, with **perfluoroalkyltetrahydro\*\***  
 \* alc.)
- IT 107-15-3, Ethylene diamine, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(linear and branched, reaction of, with \*\*\*perfluorooctyltetrahydroacrylate)

L13 ANSWER 12 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 1994:108703 HCAPLUS  
DN 120:108703  
ED Entered STN: 05 Mar 1994  
TI Halogenated blowing agent emulsions and their use in manufacture of fine-celled plastic foams  
IN Dams, Rudolf J.; Flynn, Richard M.; Focquet, Koen; Owens, John G.  
PA Minnesota Mining and Manufacturing Co., USA  
SO PCT Int. Appl., 41 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
IC C08L009-14; C08L075-04  
CC 37-6 (Plastics Manufacture and Processing)  
FAN. CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9307201	A2	19930415	WO 1992-US7225	19920826
	WO 9307201	A3	19930513		
	W: AU, BR, CA, JP, KR				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, SE				
	US 5210106	A	19930511	US 1991-771442	19911004
	US 5211873	A	19930518	US 1992-918207	19920721
	AU 9225188	A1	19930503	AU 1992-25188	19920826
	EP 606252	A1	19940720	EP 1992-918868	19920826
	R: BE, CH, DE, ES, FR, GB, IT, LI, NL, SE				
	JP 06511274	T2	19941215	JP 1992-506887	19920826
	BR 9206579	A	19950530	BR 1992-6579	19920826
PRAI	US 1991-771442	A	19911004		
	US 1992-918207	A	19920721		
	WO 1992-US7225	A	19920826		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 9307201	IC	C08L009-14IC C08L075-04
US 5210106	NCL	521/110.000; 252/182.240; 252/182.270; 521/131.000
US 5211873	NCL	252/182.240; 252/182.270; 516/012.000; 516/DIG.001; 521/112.000; 521/114.000; 521/131.000

OS MARPAT 120:108703

AB Emulsions for manufacture of, e.g. fine-celled polyurethane foams, contain  $\geq 1$  high-mol.-weight compound with  $\geq 2$  reactive H atoms,  $\geq 1$  low-boiling chlorohydrocarbon blowing agent,  $\geq 1$  Cl-free **perfluorinated** compound, a **fluoro** surfactant, and, optionally, a silicone surfactant and a hydrocarbon blowing agent. Thus, PAPI 135 was rapidly mixed with a mixture containing polypropoxylated sorbitol, water, oligomeric **fluoro** surfactant, N,N-dimethylcyclohexylamine, 2,2-dichloro-1,1,1-trifluoroethane, and **perfluoropentane** to give a rigid foam with 90% fine-closed cell content 90%, and thermal conductivity 21.6-21.7 mW/m K.

ST blowing agent emulsion polyurethane foam manuf; thermal insulator polyurethane foam; **fluoropentane** blowing agent polyurethane foam; **fluoro** surfactant blowing agent emulsion; **chlorotrifluoroethane** blowing agent emulsion polyurethane foam; polyoxypropylene sorbitol polyurethane foam blowing agent; PAPI polyurethane foam blowing agent emulsion

IT Hydrocarbons, uses  
**Perfluoro** compounds  
RL: USES (Uses)  
(blowing agents, emulsions containing, for manufacture of fine-celled polyurethane foams)

IT **Surfactants**  
(**fluoro**, for halogenated blowing agent emulsions in manufacture of fine-celled polyurethane foams)

IT Blowing agents  
(halogenated, emulsions containing, for manufacture of fine-celled polyurethane

- foams)
- IT Urethane polymers, preparation  
RL: PREP (Preparation)  
(manufacture of cellular, halogenated blowing agent emulsions in)
- IT Thermal insulators  
(polyurethane foams, manufacture of, halogenated blowing agent emulsions in)
- IT Siloxanes and Silicones, uses  
RL: USES (Uses)  
(surfactants, for halogenated blowing agent emulsions in manufacture of fine-celled polyurethane foams)
- IT Hydrocarbons, uses  
RL: USES (Uses)  
(chloro, blowing agents, emulsions containing, for manufacture of fine-celled polyurethane foams)
- IT Hydrocarbons, uses  
RL: USES (Uses)  
(chloro **fluoro**, blowing agents, emulsions containing, for manufacture of fine-celled polyurethane foams)
- IT Urethane polymers, preparation  
RL: PREP (Preparation)  
(polyoxyalkylene-, manufacture of cellular, halogenated blowing agent emulsions in)
- IT 152206-27-4, Galden LS 217  
RL: USES (Uses)  
(blowing agents, Galden LS-217, emulsions containing, for manufacture of fine-celled polyurethane foams)
- IT 287-92-3, Cyclopentane  
RL: USES (Uses)  
(blowing agents, emulsions containing halogenated blowing agents and, for manufacture of fine-celled polyurethane foams)
- IT 75-29-6, Isopropyl chloride 306-83-2 311-89-7,  
**Perfluorotributylamine** 335-36-4, **Perfluoro**  
(2-butyltetrahydrofuran) 338-83-0, **Perfluorotripropylamine**  
355-42-0, **Perfluorohexane** 374-12-9, 1,1,2,2-  
**Tetrafluorocyclobutane** 374-30-1 375-83-7 382-28-5,  
**Perfluoro-N-methylmorpholine** 678-26-2, **Perfluoropentane**  
1580-20-7 1600-71-1 1717-00-6 49852-57-5, 1,2,2-Trifluoro  
-1-trifluoromethylcyclobutane 100645-99-6 152076-34-1  
152076-35-2  
RL: USES (Uses)  
(blowing agents, emulsions containing, for manufacture of fine-celled polyurethane foams)
- IT 55973-07-4P 58718-85-7P 152848-87-8P 152848-88-9P 152848-89-0P  
RL: PREP (Preparation)  
(manufacture of cellular, halogenated blowing agent emulsions in)
- IT 79-41-4DP, siloxane esters, polymers with acrylic compds. 1120-71-4DP,  
Propane sultone, quaternary salts with tertiary amine group-containing acrylic  
polymer 1691-99-2P 152107-60-3P 152107-61-4P 152109-05-2DP,  
quaternary salts with propanesultone 152130-86-4P 152130-87-5P  
152130-88-6P  
RL: PREP (Preparation)  
(manufacture of, for surfactants for halogenated blowing agent emulsions in  
manufacture of fine-celled polyurethane foams)
- L13 ANSWER 13 OF 13 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 1993:652601 HCAPLUS  
DN 119:252601  
ED Entered STN: 11 Dec 1993  
TI **Fluoro** surfactants for paints and coatings: improvement of  
surface structure  
AU **Dams, R.**  
CS Antwerp, Belg.  
SO Tenside, Surfactants, Detergents (1993), 30(5), 326-7  
CODEN: TSDEES; ISSN: 0932-3414  
DT Journal  
LA German  
CC 46-4 (Surface Active Agents and Detergents)  
Section cross-reference(s): 42  
AB The use of **fluorinated** surfactants for lowering of coating  
surface tensions and thus improving the surface structure of the dried

coatings was discussed.  
 ST coating surfactant **fluorinated**  
 IT **Surfactants**  
     (**fluorine**-containing, for coatings)  
 IT Surface structure  
     (of coatings, **fluoro** surfactants for improved)  
 IT Coating materials  
     (surface structure of, **fluoro** surfactants for improved)

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 MOST RECENT DERWENT UPDATE: 200527 <200527/DW>  
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[http://www.stn-international.de/training\\_center/patents/stn\\_guide.pdf](http://www.stn-international.de/training_center/patents/stn_guide.pdf) <<<

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<http://thomsonderwent.com/coverage/latestupdates/> <<<

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 PLEASE CHECK:  
<http://thomsonderwent.com/support/dwpioref/reftools/classification/code-revision/>  
 FOR DETAILS. <<<

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L22 ANSWER 1 OF 7 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2004-592542 [57] WPIX

DNC C2004-215348

TI Thermally responsive composition, useful as e.g. a dental composition,  
 comprises thermally responsive viscosity modifier, polymerizable component  
 different than the modifier and water.

DC A14 A25 A96 B05 D22

IN ALI, M B; BUI, H T; LIU, J J; MA, J; MITRA, S B; NGUYEN, M T; OXMAN, J D

PA (ALIM-I) ALI M B; (BUIH-I) BUI H T; (LIUJ-I) LIU J J; (MAJJ-I) MA J;  
 (MITR-I) MITRA S B; (NGUY-I) NGUYEN M T; (OXMA-I) OXMAN J D; (MINN)

**3M INNOVATIVE PROPERTIES CO**

CYC 107

PI US 2004151691 A1 20040805 (200457)\* 22 A61K031-765

WO 2004069278 A1 20040819 (200457) EN A61K047-34

RW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE

LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE

DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG

KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM

PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US

UZ VC VN YU ZA ZM ZW

AU 2003303893 A1 20040830 (200480) A61K047-34

ADT US 2004151691 A1 Provisional US 2003-443970P 20030130, US 2003-626261

20030724; WO 2004069278 A1 WO 2003-US40676 20031218; AU 2003303893 A1 AU  
 2003-303893 20031218

FDT AU 2003303893 A1 Based on WO 2004069278

PRAI US 2003-443970P 20030130; US 2003-626261 20030724

Search done by Noble Jarrell

IC ICM A61K031-765; A61K047-34  
ICS A61K006-083

AB US2004151691 A UPAB: 20040907  
NOVELTY - Thermally responsive composition (I) comprises a thermally responsive viscosity modifier (A), a polymerizable component (B) different than the modifier and water.  
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:  
(1) treating a surface comprising applying (I) in a low viscosity state at a pre-treatment temperature to the surface; and allowing the composition to warm to a treatment temperature and increase in viscosity to a highly viscous state;  
(2) hardening a composition on a surface comprising applying (I) in a low viscosity state at a pre-treatment temperature to the surface; allowing the composition to warm to a treatment temperature and increase in viscosity to a highly viscous state, and inducing the polymerizable component to polymerize; and  
(3) making a thermally responsive viscosity modifier comprising reacting a hydroxy-terminated poly-(oxyalkylene) polymer with an isocyanate-functional (meth)acrylate or a vinyl azlactone.  
ACTIVITY - Antiinflammatory.  
No biological data given.  
MECHANISM OF ACTION - None given.  
USE - (I) is useful as a dental composition (suitable for use in the oral environment) or a medical composition (suitable for use in/on a body). (I) is also useful in the treatment of a surfaces and for hardening a composition on surfaces (preferably oral surface of a body such as bone, tooth, tongue, gingiva and/or throat). (All claimed.) (I) are also useful as e.g. reduction gels and oral coatings for hard and soft tissues; and also for the treatment of e.g. periodontal disease, gingivitis, sensitivity, halitosis and xerostomia.  
ADVANTAGE - (I) provides hardenable compositions (e.g. hardenable gels) that offer advantages like dimensional stability, thermal stability, improved stability to liquids, improved adhesion and the potential for sustained release of incorporated additives. The substantial moisture content of (I) provides the ability to easily deliver or apply a gel-on-contact aqueous material that provides substantial hydration of tissues that are subjected to dehydration.  
Dwg. 0/9

FS CPI  
FA AB; DCN  
MC CPI: A10-E07B; A10-E24; A12-V01; A12-V02B; B04-C03; B04-L01; B05-C07; B05-C08; B10-A13D; B14-N06; D08-A

L22 ANSWER 2 OF 7 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
AN 2004-439058 [41] WPIX  
DNN N2004-347350 DNC C2004-164427  
TI Aqueous etch solution for etching silicon oxide-containing substrates, comprises acid and surfactant containing perfluoroalkyl, hydroxyalkyl, alkylamine oxide, alkylcarboxylate or aminoalkyl and cation.  
DC E19 L03 U11  
IN FLYNN, R M; PARENT, M J; SAVU, P M  
PA (MINN) 3M INNOVATIVE PROPERTIES CO  
CYC 106  
PI US 2004089840 A1 20040513 (200441)\* 7 C09K013-00  
WO 2004044091 A1 20040527 (200441) EN C09K013-04  
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS  
LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW  
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK  
DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP  
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG  
PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG UZ VC  
VN YU ZA ZM ZW  
AU 2003272331 A1 20040603 (200470) C09K013-04  
ADT US 2004089840 A1 US 2002-290765 20021108; WO 2004044091 A1 WO 2003-US28606 20030911; AU 2003272331 A1 AU 2003-272331 20030911  
FDT AU 2003272331 A1 Based on WO 2004044091  
PRAI US 2002-290765 20021108  
IC ICM C09K013-00; C09K013-04  
ICS C09K013-08; H01L021-311  
AB US2004089840 A UPAB: 20040629

NOVELTY - An aqueous etch solution comprises acid and surfactant containing perfluoroalkyl, hydroxyalkyl, alkylamine oxide, alkylcarboxylate or aminoalkyl, and cation.

DETAILED DESCRIPTION - An aqueous etch solution comprises acid and surfactant of formula  $Rf-SO_2(N^-)-R1M^+$ .

$Rf$  = 1-12C perfluoroalkyl group;

$R1$  = H, alkyl, hydroxyalkyl, alkylamine oxide, alkylcarboxylate or aminoalkyl;

$M^+$  = cation.

An INDEPENDENT CLAIM is also included for a method of etching comprising contacting a substrate with the etch solution.

USE - For use in etching silicon oxide-containing substrates, e.g. integrated circuit.

ADVANTAGE - The inventive etch solution includes fluorinated surfactant that is stable in the aqueous acid etch solution and reduces the surface tension so that nanoscale features may be effectively provided to a silicon substrate. It has same etch rate as conventional etch solutions and possesses low surface tension. It is non-forming, low in particulates that may contaminate a substrate and leaves low or no surface residues on rinsing. It has improved stability of performance when filtered or after extended storage and finally affords excellent substrate surface smoothness.

Dwg. 0/0

FS CPI EPI

FA AB; DCN

MC CPI: E07-D04A; E10-A01; E10-A03B; E10-A08C; E31-B03C; L04-C07C1

EPI: U11-A10

L22 ANSWER 3 OF 7 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2004-430593 [40] WPIX

DNN N2004-340480 DNC C2004-161135

TI Aqueous etch solution for etching of silicon-containing substrate for microelectronic devices, e.g. integrated circuit, comprises acid and surfactant.

DC E19 L03 U11

IN FLYNN, R M; LAMANNA, W M; MOORE, G G I; PARENT, M J; QIU, Z; SAVU, P M; ZHANG, Z

PA (MINN) 3M INNOVATIVE PROPERTIES CO

CYC 106

PI US 2004094510 A1 20040520 (200440)\* 11 C23F001-00

WO 2004044092 A1 20040527 (200440) EN C09K013-04

RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS  
LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK  
DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP  
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NI NO NZ OM PG  
PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG UZ VC  
VN YU ZA ZM ZW

AU 2003278831 A1 20040603 (200470) C09K013-04

ADT US 2004094510 A1 US 2002-290763 20021108; WO 2004044092 A1 WO 2003-US29262 20030917; AU 2003278831 A1 AU 2003-278831 20030917

FDT AU 2003278831 A1 Based on WO 2004044092

PRAI US 2002-290763 20021108

IC ICM C09K013-04; C23F001-00

ICS C09K013-08; H01L021-311

AB US2004094510 A UPAB: 20040624

NOVELTY - An aqueous etch solution comprises an acid and a surfactant.

DETAILED DESCRIPTION - An aqueous etch solution comprises an acid and a surfactant of formula  $RfQR1SO_3-M^+$ .

$Rf$  = 1-12C perfluoroalkyl group;

$R1$  = alkylene of formula  $C_nH_{2n}(CHOH)_oC_mH_{2m}$ , and is optionally substituted by a catenary oxygen or nitrogen group;

$n, m$  = 1-6;

$o$  = 0-1;

$M^+$  = cation;

$Q$  = 0 or  $SO_2NR_2$ ;

$R_2$  = H, alkyl, aryl, hydroxyalkyl, aminoalkyl, or sulfonatoalkyl group, optionally containing catenary oxygen or nitrogen heteroatoms.

An INDEPENDENT CLAIM is also included for etching a substrate by contacting the substrate with the above etch solution.

USE - For etching of silicon-containing substrates (claimed) for microelectronic devices, such as integrated circuit, flat panel displays; microelectromechanical systems; or electronic equipment including personal computers, cellular phones, electronic calendars, personal digital assistants, or medical electronics, for televisions, stereo components, or automobiles.

ADVANTAGE - The fluorinated surfactant is stable in the aqueous acid etch solution, and reduces the surface tension of the solution, thus providing nanoscale features to the substrate. The etch solution has the same etch rate as the conventional etch solutions and possesses low surface tension resulting in low contact angles between the solution and substrate. It is non-foaming, and is low in particulates that may contaminate the substrate and leaves low or no surface residues on rinse. It provides improved stability of performance when filtered or after extended storage and affords excellent substrate surface smoothness.

Dwg. 0/0

FS CPI EPI

FA AB; DCN

MC CPI: E07-D04A; E10-A01; E10-A09B7; E10-A09B8; E10-A10D; E10-A22; E31-B03C;

E32-A04; L04-C07C1

EPI: U11-A10

L22 ANSWER 4 OF 7 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2003-310954 [30] WPIX

CR 1996-354514 [35]; 1997-341674 [31]; 1999-600394 [51]; 2001-570046 [64]; 2002-238370 [29]; 2002-506442 [54]; 2002-665798 [71]; 2003-090300 [08]; 2003-644573 [61]; 2003-764656 [72]

DNC C2003-081412

TI Cleaning composition for removing contaminants, e.g., hydrocarbons, from surface of substrates, e.g. metal, comprises mono-, di-, or trialkoxy-substituted perfluoroalkane compound(s) and surface active agent(s).

DC D25 E19

IN FLYNN, R M; MOORE, G G I; OWENS, J G

PA (MINN) 3M INNOVATIVE PROPERTIES CO

CYC 1

PI US 2002169098 A1 20021114 (200330)\* 18 C11D017-00

US 6509309 B2 20030121 (200330) C11D007-30

ADT US 2002169098 A1 CIP of US 1995-375812 19950120, CIP of US 1995-573416 19951215, Div ex US 1999-268236 19990315, Div ex US 2001-867169 20010529, US 2002-96713 20020312; US 6509309 B2 CIP of US 1995-375812 19950120, CIP of US 1995-573416 19951215, Div ex US 1999-268236 19990315, Div ex US 2001-867169 20010529, US 2002-96713 20020312

FDT US 2002169098 A1 CIP of US 5925611, Div ex US 6291417, Div ex US 6380149;

US 6509309 B2 CIP of US 5925611, Div ex US 6291417, Div ex US 6380149

PRAI US 1999-268236 19990315; US 1995-375812 19950120;

US 1995-573416 19951215; US 2001-867169 20010529;

US 2002-96713 20020312

IC ICM C11D007-30; C11D017-00

ICS C11D003-24

AB US2002169098 A UPAB: 20031107

NOVELTY - Cleaning composition comprises at least one mono-, di-, or trialkoxy-substituted perfluoroalkane, perfluorocycloalkane, perfluorocycloalkyl-containing perfluoroalkane, or perfluorocycloalkylene-containing perfluoroalkane compound; and at least one surface active agent.

USE - The cleaning composition is used for removing contaminants, e.g., hydrocarbons, fluorocarbons, or even water, from the surface of a substrate, e.g. metal, glass, ceramic, plastic, or fabric.

ADVANTAGE - The alkoxy-substituted compounds used in the inventive composition exhibit unexpectedly high stabilities in the presence of acids, bases, and oxidizing agents; and in spite of their fluorine content, these compounds are good solvents for hydrocarbons and fluorocarbons. They are low in toxicity and flammability, have zero depletion potentials, and have short atmospheric lifetimes and low global warming potentials relative to chlorofluorocarbons and chlorofluorocarbon substitutes. Their good solvency and environmentally acceptable properties satisfy the need for substitutes or replacements for the commonly-used cleaning solvents which have been linked to the destruction of the earth's ozone layer.

Dwg. 0/0  
 FS CPI  
 FA AB; DCN  
 MC CPI: D11-A; D11-B; D11-D01; E07-D05; E07-E03; E10-H01; E10-H01C; E11-F05

L22 ANSWER 5 OF 7 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 2001-556747 [62] WPIX  
 CR 1999-429973 [36]  
 DNN N2001-413666 DNC C2001-165524  
 TI Electrolyte composition useful in electrochemical systems such as batteries, comprises specific conductive salt and surfactant salt.  
 DC E19 L03 V01 X16  
 IN BOYD, S D; FANTA, A D; JOHNSON, B J; LAMANNA, W M; LOCH, R B; PHAM, P T; SHIMADA, H  
 PA (MINN) 3M INNOVATIVE PROPERTIES CO  
 CYC 1  
 PI US 6280883 B1 20010828 (200162)\* 16 H01M006-18  
 ADT US 6280883 B1 CIP of US 1997-988507 19971210, US 1999-267310 19990312  
 PRAI US 1999-267310 19990312; US 1997-988507 19971210  
 IC ICM H01M006-18  
 AB US 6280883 B UPAB: 20011026

NOVELTY - An electrolyte composition comprises a conductive salt, and a surfactant salt (IA). The conductive salt comprises alkali metal, alkaline earth metal, a group IIB metal, a group IIIB metal, a rare earth metal, a nitrogen onium cation or a proton, an anion with perfluoroalkyl sulfo group, a bis-fluoroalkylsulfonyl methide anion and a tris-(perfluoroalkanesulfonyl)methide anion.

DETAILED DESCRIPTION - An electrolyte composition comprises conductive salt, and surfactant salt (IA), at the molar ratio of 99.9:0.1-75:25. The conductive salt comprises cation chosen from alkali metal, alkaline earth metal, group IIB metal, group IIIB metal, rare earth metal, nitrogen onium cation or proton, anion of formula  $RfOSO_3^-$ , where  $Rf$  is a 2-4C perfluoroalkyl group, anion (I, II), bis-fluoroalkylsulfonyl methide anion (III) and tris-(perfluoroalkanesulfonyl)methide anion (IV).

$Rf_1$ ,  $Rf_2$  = optionally branched 1-4C perfluoroalkyl group,  $Rf_1$  and  $Rf_2$  have a total of up to 5 carbon atoms;  
 $Rf_3$  = 2-4C perfluoroalkylene moiety optionally substituted by optionally branched 1-2C perfluoroalkyl group,  $Rf_3$  has total of up to 4 carbon atoms;  
 $X^-$  =  $O^-$ ,  $N-SO_2Rf_4$  or  $-C(Rf_6SO_2)(SO_2Rf_7)$ ;  
 $Z$  =  $CF_2$ ,  $O$ ,  $NRF_8$  or  $Sf_4$ ;  
 $Rf_4$ ,  $Rf_5$  =  $CmF_{2m+1}'$  or  $(CF_2)_q-SO_2-X^-$ ;  
 $Rf_6$ ,  $Rf_7$  =  $CmF_{2m+1}'$ ,  $(CF_2)_4-SO_2-X^-$ ,  $N(Rf_1)(Rf_2)(CF_2)n'$  or group (V);  
 $Rf_8$  =  $CmF_{2m+1}'$  or  $(CF_2)_q-SO_2-X^-$ ;  
 $Rf_6'$ ,  $Rf_7'$  = perfluoroalkylene moiety of formula  $CrF_{2r}$ ;  
 $n'$ ,  $r$ ,  $n$ ,  $q$  = 1-4;  
 $Rf_{II}$ ,  $Rf_{III}$  = 1-4C perfluoroalkyl groups,  $Rf_I$  and  $Rf_{II}$  have a total of up to 5 carbon atoms;  
 $R$  = H, CN, F, 1-6C alkyl, phenyl optionally substituted with 1-4C alkyl;  
 $Rf_{III}$ ,  $Rf_{IV}$ ,  $Rf_V$  = 1-4C perfluoroalkyl group,  $Rf_{III}$ ,  $Rf_{IV}$ , and  $Rf_V$  have total of up to 6 carbon atoms;  
 $M^+n$  = cation with the valence equal to  $n$ ;  
 $n$  = 1-4;  
 $Rf$ ,  $Rf'$  = 1-12C perfluoroalkyl, perfluorocycloalkyl or perfluorocycloalkyl perfluoroalkyl having 4-7C ring carbon atoms and 1-4C alkyl chain and optionally containing catenary heteroatoms,  $Rf$  and  $Rf'$  have a total of 8 carbon atoms.

INDEPENDENT CLAIMS are also included for the following:  
 (i) an electrochemical system which comprises a cathode (6), a anode (3) and an electrolytic composition;  
 (ii) battery or rechargeable battery comprising a lithium-intercalated carbon anode and a metal oxide cathode;  
 (iii) a method of improving safety and performance of an electrochemical system which involves using an electrolyte composition comprising surfactant salt (II), a conductive salt having a cation, an anion (I), and a matrix material.

USE - Useful in electrochemical system such as batteries, e.g. primary and secondary (rechargeable batteries), double-layer capacitors,

supercapacitors, fuel cells, electroplating, electrorefining systems.

**ADVANTAGE** - Perfluorinated imide surfactant salts in electrolyte comprising short chain bis(perfluoroalkanesulfonylimide) conductive salts reduces exotherm energies produced at the electrode/electrolyte interface when a battery temperatures is up to 200 deg. C. The surfactant salts in electrolytes comprising short chain bis(perfluoroalkanesulfonylimide) conductive salts maintains the high ionic conductivity, solubility, and chemical and thermal stability of the electrolyte. The surfactant and conductive salts lower the surface tension of the electrolyte solution and allow rapid wetting of battery component materials such as separators and electrodes to save time, process steps, and process equipment. The surfactant and conductive salts expand the range of electrolyte compositions available by allowing the use of high viscosity, high surface energy solvents. The surfactant and conductive salts increase the area of contact between the electrolyte and the electroactive materials to decrease battery internal resistance and increase performance, and are used in small quantity additions to existing electrolyte formulations to enhance performance. The surfactant and conductive salts provide for potential applications in a variety of battery systems including aqueous electrolyte batteries as well as fuel cells and capacitors. Corrosion of aluminum current collectors is reduced by the surfactant salt, as repassivation potential of the cell is increased to over 4.5 volts, thus reducing the corrosion current at high positive potentials. Capacity fade in cells during high temperature cycling and storage (e.g., 60 deg. C, or higher at full charge of 4.2V) is reduced by the surfactant salt. Surfactant salt/conductive salt gives electrolyte salt performance comparable to lithium hexafluorophosphate. The drawbacks of hydrolytic and thermal instability inherent in the hexafluorophosphate anion, in lithium hexafluorophosphate, are prevented.

**DESCRIPTION OF DRAWING(S)** - The figure shows the view of a lithium ion battery.

Anode 3

Cathode 6

Dwg. 1/1

FS CPI EPI

FA AB; GI; DCN

MC CPI: E05-A; E05-B01; E05-L; E05-M; E05-N; E05-P; E07-D04A; E07-D09A; E07-F03; E07-H; E10-A08C; E10-A09B8; E10-A10D; E10-A22; L03-E01C  
EPI: V01-B01B1; V01-B01D; X16-A02A; X16-B01F1; X16-C; X16-J01A; X16-L02

L22 ANSWER 6 OF 7 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1998-286826 [25] WPIX

DNN N1998-225441 DNC C1998-088857

TI Fluoro-alkyl-carbonyl fluoride(s) and derivatives used as e.g. surfactants - having one or more alpha branched fluoroalkyl carbonyl moieties.

DC A60 D25 E19 G02 G06 H01 M11 P35

IN FAN, W; MANZARA, A P; MOORE, G G I; STERN, R M

PA (MINN) MINNESOTA MINING & MFG CO; (MINN) **3M INNOVATIVE PROPERTIES**

CO

CYC 78

PI WO 9819988 A1 19980514 (199825)\* EN 84 C07C053-50

RW: AT BE CH DE DK EA ES FI FR GB GH GR IE IT KE LS LU MC MW NL OA PT  
SD SE SZ UG

W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE  
GH HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW  
MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG UZ VN YU

AU 9723396 A 19980529 (199841) C07C053-50

ZA 9709420 A 19990630 (199931) 83 C07C000-00

EP 937027 A1 19990825 (199939) EN C07C053-50

R: BE CH DE FR GB IT LI

US 6013795 A 20000111 (200010) C07D295-00

CN 1239940 A 19991229 (200019) C07C053-50

KR 2000052960 A 20000825 (200121) C07C053-50

JP 2002514190 W 20020514 (200236) 86 C07C051-04

ADT WO 9819988 A1 WO 1997-US4582 19970321; AU 9723396 A AU 1997-23396  
19970321; ZA 9709420 A ZA 1997-9420 19971021; EP 937027 A1 EP 1997-916142  
19970321, WO 1997-US4582 19970321; US 6013795 A US 1996-743479 19961101;  
CN 1239940 A CN 1997-180362 19970321; KR 2000052960 A WO 1997-US4582  
19970321, KR 1999-703834 19990430; JP 2002514190 W WO 1997-US4582  
19970321, JP 1998-521345 19970321

FDT AU 9723396 A Based on WO 9819988; EP 937027 A1 Based on WO 9819988; KR 2000052960 A Based on WO 9819988; JP 2002514190 W Based on WO 9819988

PRAI US 1996-743479 19961101

IC ICM C07C000-00; C07C051-04; C07C053-50; C07D295-00

ICS C07C031-38; C07C031-40; C07C053-21; C07C059-135; C07C069-63; C07C069-653; C07C205-43; C07C219-06; C07C233-36; C07C237-00; C07C291-04; C07C309-15; C07C327-00; C07C327-20; C07D211-00; C07D213-81; C07D213-89; C07D265-00; C07D295-12; C07D295-14; C07D295-22; C11D001-00; C11D001-88; C11D001-90

ICA A62D001-00

AB WO 9819988 A UPAB: 19980624

A composition comprises one or more alpha -branched fluoroalkylcarbonyl fluoride compounds of formula (I).

$\text{Rf-C(R'f)FC(=O)F}$  (I)

Also claimed, a composition which comprises a compound having one or more alpha -branched fluoroalkylcarbonyl moieties of formula (II).

$[\text{Rf-C(R'f)FC(=O)-}]_p\text{X}$  (II)

Also claimed, a composition which comprises one or more alpha -branched 1,1-dihydrofluoroalkyl moieties of formula (III).

$\text{RfC(R'f)FCH}_2\text{X}_1$  (III)

Also claimed, a composition which comprises a compound of formula (IV).

$\text{RfC(R'f)FC(=O)O-}$   $1/9\text{Mq}^+$  (IV)

Also claimed, a method of treating a compound of formula (IV) by heating to  $>140$  deg. C to give monohydride and fluoroolefin.

In formula (I): Rf, R'f = an acyclic fluorinated group bonded through C that is either substituted or unsubstituted, linear or branched and may optionally contain one or more catenary heteroatoms; Rf or R'f may contain one or more -H or one or more other halogen atoms provided that at least 75% of the atoms attached to the C backbone are fluorine atoms; and at least 1 of Rf and R'f contain at least 5 C's where the sum of C atoms is at least 7.

In formula (II): Rf, R'f = fluorinated group bonded through C that is either substituted or unsubstituted, cyclic or acyclic, linear or branched and may optionally contain one or more catenary heteroatoms. Rf or R'f may contain one or more -H or one or more halogen atoms provided that at least 75% of the atoms attached to the C backbone are F atoms; p = 1 to many equalling the valency of X; X = halogen, hydroxyl, or a moiety remaining after the reaction of an alpha -branched fluoroalkylcarbonyl fluoride with a reagent containing at least 1 active H atom after the elimination of hydrogen fluoride; and when X = H or hydroxyl, p = 1, Rf and R'f = acyclic alkyl and at least 1 of Rf and R'f contains at least 5C atoms. The sum of the C atoms in Rf and R'f is at least 7.  $\text{X}_1 = -\text{OR}$ ,  $-\text{OSO}_2\text{R}$ ,  $-\text{OCOR}$ ,  $-\text{N(R}_1)(\text{R}_2)$ ,  $-\text{SR}$ , halogen or an ethylenically unsaturated moiety; R, R<sub>1</sub>, R<sub>2</sub> = H, alkyl, aryl, alkaryl, aralkyl that may be substituted or unsubstituted, saturated or unsaturated, linear or branched, cyclic or acyclic and may contain one or more catenary heteroatoms where R<sub>1</sub> and R<sub>2</sub> together = heterocyclic ring; Q = substituted or unsubstituted divalent organic group; M = cation selected from H<sup>+</sup>, metal cation, ammonium cation, substituted ammonium cation, polyammonium cation; and q = valency of M.

USE - The composition can be used as surfactants and emulsifiers in fluoropolymer emulsions, cleaning solutions, aqueous film forming foams, coating additives, plating baths, wetting agents, floor polish levelling agents, dispersion aids, oil well stimulation chemicals, photographic coupling agents, soil, water and oil repellent compositions.

ADVANTAGE - The derivatives are environmentally non-persistent and have much lower toxicity than their linear and cyclic homologues. The salt compositions are low in toxicity and thermally degrade quickly at low temperatures, 80-100 deg. C, in aqueous media. They breakdown in the environment to volatile, non-surface active species.

Dwg. 0/0

FS CPI GMPI

FA AB; DCN

MC CPI: A08-S05; D11-A; E10-A25B2; G02-A05; **H08-E05**; M11-B

L22 ANSWER 7 OF 7 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 1996-068625 [07] WPIX

CR 1996-020330 [02]

DNN N1996-057739 DNC C1996-022275

TI Omega-hydro-fluoroalkyl ether(s) useful as CFC substitutes - are

environmentally friendly and useful, e.g. as solvents, coolants in refrigerators, chemical fire extinguishing agents and in synthetic blood.

DC A60 B05 E15 E16 G04 K01 L03 M12 P35 P55  
IN FLYNN, R M; GUERRA, M A; MOORE, G G I; OWENS, J G; MOORE, G G  
PA (ASAH) ASAH CHEM CO LTD; (BOSC) BOSCH GMBH ROBERT; (MINN) MINNESOTA MINING & MFG CO LTD; (MINN) MINNESOTA MINING & MFG CO; (MINN) 3M INNOVATIVE PROPERTIES CO

CYC 21

PI WO 9532174 A1 19951130 (199607)\* EN 63 C07C043-12  
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE  
W: CA CN JP RU  
EP 760809 A1 19970312 (199715) EN C07C043-12  
R: DE FR GB IT  
US 5658962 A 19970819 (199739) 15 C09K003-00  
JP 10500950 W 19980127 (199814) 53 C07C043-12  
US 6024176 A 20000215 (200016) A62C002-00  
CN 1148377 A 19970423 (200109) C07C043-12  
US 6204299 B1 20010320 (200118) C08G018-00  
US 6214253 B1 20010410 (200122) C09K005-00  
US 2001027172 A1 20011004 (200161) C11D001-00  
EP 1170275 A2 20020109 (200205) EN C07C043-12  
R: DE FR GB IT  
RU 2177934 C2 20020110 (200220) C07C043-12  
US 6361713 B1 20020326 (200226) C09K003-00  
EP 760809 B1 20020724 (200256) EN C07C043-12  
R: DE FR GB IT  
DE 69527527 E 20020829 (200264) C07C043-12  
US 6491983 B2 20021210 (200301) B05D001-00  
US 2003166487 A1 20030904 (200359) C11D017-00  
JP 2004203889 A 20040722 (200448) 32 C07C043-12  
JP 3590067 B2 20041117 (200475) 29 C07C043-12  
US 6863211 B2 20050308 (200518) C07C019-08  
ADT WO 9532174 A1 WO 1995-US6110 19950515; EP 760809 A1 EP 1995-919208  
19950515; WO 1995-US6110 19950515; US 5658962 A US 1995-440450 19950512;  
JP 10500950 W JP 1995-530369 19950515, WO 1995-US6110 19950515; US 6024176  
A CIP of US 1994-246962 19940520, Div ex US 1995-440450 19950512, Div ex  
US 1997-881347 19970624, US 1998-151857 19980911; CN 1148377 A CN  
1995-193106 19950515; US 6204299 B1 CIP of US 1994-246962 19940520, Div ex  
US 1995-440450 19950512, US 1997-881347 19970624; US 6214253 B1 CIP of US  
1994-246962 19940520, Div ex US 1995-440450 19950512, Div ex US  
1997-881347 19970624, Div ex US 1998-151857 19980611, US 1999-452711  
19991202; US 2001027172 A1 CIP of US 1994-246962 19940520, Div ex US  
1995-440450 19950512, Div ex US 1997-881347 19970624, Div ex US  
1998-151857 19980911, Div ex US 1999-452711 19991202, US 2001-789788  
20010220; EP 1170275 A2 Div ex EP 1995-919208 19950515, EP 2001-120757  
19950515; RU 2177934 C2 WO 1995-US6110 19950515, RU 1996-124387 19950515;  
US 6361713 B1 CIP of US 1994-246962 19940520, Div ex US 1995-440450  
19950512, Div ex US 1997-881347 19970624, Div ex US 1998-151857 19980911,  
Div ex US 1999-452711 19991202, US 2000-641192 20000817; EP 760809 B1 EP  
1995-919208 19950515, WO 1995-US6110 19950515, Related to EP 2001-120757  
19950515; DE 69527527 E DE 1995-627527 19950515, EP 1995-919208 19950515,  
WO 1995-US6110 19950515; US 6491983 B2 CIP of US 1994-246962 19940520, Div  
ex US 1995-440450 19950512, Div ex US 1997-881347 19970624, Div ex US  
1998-151857 19980911, Div ex US 1999-452711 19991202, US 2001-789788  
20010220; US 2003166487 A1 CIP of US 1994-246962 19940520, Div ex US  
1995-440450 19950512, Div ex US 1997-881347 19970624, Div ex US  
1998-151857 19980911, Div ex US 1999-452711 19991202, Div ex US  
2001-789788 20010220, US 2002-241901 20020912; JP 2004203889 A Div ex JP  
1995-530369 19950515, JP 2004-846 20040106; JP 3590067 B2 JP 1995-530369  
19950515, WO 1995-US6110 19950515; US 6863211 B2 CIP of US 1994-246962  
19940520, Div ex US 1995-440450 19950512, Div ex US 1997-881347 19970624,  
Div ex US 1998-151857 19980911, Div ex US 1999-452711 19991202, Div ex US  
2001-789788 20010220, US 2002-241901 20020912  
FDT EP 760809 A1 Based on WO 9532174; JP 10500950 W Based on WO 9532174; US  
6024176 A CIP of US 5476974, Div ex US 5658962; US 6204299 B1 CIP of US  
5476974, Div ex US 5658962; US 6214253 B1 CIP of US 5476974, Div ex US  
5658962, Div ex US 6024176; US 2001027172 A1 CIP of US 5476974, Div ex US  
5658962, Div ex US 6024176, Div ex US 6204299, Div ex US 6214253; EP  
1170275 A2 Div ex EP 760809; RU 2177934 C2 Based on WO 9532174; US 6361713  
B1 CIP of US 5476974, Div ex US 5658962, Div ex US 6024176, Div ex US

6204299, Div ex US 6214253; EP 760809 B1 Related to EP 1170275, Based on WO 9532174; DE 69527527 E Based on EP 760809, Based on WO 9532174; US 6491983 B2 CIP of US 5476974, Div ex US 5658962, Div ex US 6024176, Div ex US 6204299, Div ex US 6214253; US 2003166487 A1 CIP of US 5476974, Div ex US 5658962, Div ex US 6024176, Div ex US 6204299, Div ex US 6214253, Div ex US 6491983; JP 3590067 B2 Previous Publ. JP 10500950, Based on WO 9532174; US 6863211 B2 CIP of US 5476974, Div ex US 5658962, Div ex US 6024176, Div ex US 6204299, Div ex US 6214253, Div ex US 6491983

PRAI US 1995-440450 19950512; US 1994-246962 19940520;  
 US 1997-881347 19970624; US 1998-151857 19980911;  
 US 1999-452711 19991202; US 2001-789788 20010220;  
 US 2000-641192 20000817; US 2002-241901 20020912

REP 04Jnl.Ref; EP 261501; FR 1373014; US 3674800; US 3706773; US 3766274

IC ICM A62C002-00; B05D001-00; C07C019-08; C07C043-12; C08G018-00;  
 C09K003-00; C09K005-00; C11D001-00; C11D017-00

ICS A62D001-00; B01D012-00; B23K031-02; B23K035-34; B23K035-38;  
 C07C041-18; C07C041-24; C07C043-192; C07C043-313; C07C059-135;  
 C07C069-708; C07C217-08; C07C235-04; C07C255-13; C07C265-04;  
 C07C309-65; C07D319-04; C07D319-06; C07F007-18; C08G018-08;  
 C08J003-20; C08J009-14; C09K021-08; C10M105-54; C11D001-04;  
 C11D007-28; G11B005-72

ICA H05K003-26

AB WO 9532174 A UPAB: 20050316

A normally liquid, omega-hydrofluoroalkyl ether cpd. of formula (I) is new:  
 X = a primary H; X = F, primary H or primary Cl; n = 0-7; Rf, Rf', Rf'' = perfluoroalkylene (opt. substd. with perfluoroalkyl or perfluorocycloalkyl gps. or with an etheric O-containing moiety); provided that when X = H or Cl, Rf has 1-18C, Rf' has 1-12C and Rf'' has 2-12C; and provided that when X = F, Rf has 4C, Rf' has 1C and Rf'' has 2C. Also claimed are cpds. of formula (II) and (III): Rfs and Rft = 1-18C perfluoroalkyl; Rft' = 1-11C perfluoroalkylene; b, d 3; c 1; Z = COOH, COOM1/v, COONH4, COOR, CH2OH, COF, COCl, COR, CONRR, CH2NH2, CH2NCO, CN, CH2OSO2R, CH2OCOR, CH2OCOCR=CH2, CONH(CH2)mSi(OR)3 or CH2O(CH2)mSi(OR)3; M = ammonium or metal atom of valency v; v = 1-4; m = 1-11; R = 1-14C alkyl opt. containing a heteroatom, 1-14C fluoroalkyl and 6-10 membered aryl.

USE - (I) are useful in applications where CFCs, HCFCs or halons have been used, e.g. as solvents for precision or metal cleaning of electronic articles such as discs or circuit boards, in vapour phase soldering, to displace water from surfaces, heat transfer agents, coolants in refrigerator or freezer compressors or air conditioners, blowing agents or cell size regulators in making polyurethane foam insulation or chemical fire extinguishing agents in streaming applications, total flooding, explosion suppression and inertion and as carrier solvents (or highly fluorinated polyethers used as lubricants (or magnetic recording media. (I) are also useful in various medical and oxygen transport applications, e.g. artificial or synthetic bloods. (II) and (III) are precursors of (I). (II) and (III) can be converted into other derivs., e.g. the ammonium salt which can be used as surfactants, elastomers, coatings, lubricants, substances used in the preparation of liquid crystal materials and in the treatment of fibrous substrates to impart oil and water repellancy.

ADVANTAGE - (I) are hydrophobic and less oleophobic than the perfluoroalkyl ether analogues, chemically inert, thermally stable, water insoluble and normally liquid (e.g. at 20 deg.C). They can be made in high yield, high purity and with a wide range of mol. wts. The covalent bond between the -H and the terminal C is generally degradable by atmospheric photo-oxidation, thus making (I) environmentally acceptable or compatible. (II) and (III) are more soluble in aqueous media and other organic solvents than are the corresponding perfluoroalkanoic acid derivs. (II) and (III) can also be prepared in high yields, as single molecular species.

Dwg. 0/0

FS CPI GMPI

FA AB; GI; DCN

MC CPI: A08-B04A; B05-B01B; B10-A09B; B10-A14; B10-A15; B10-A25; B10-B03B; B10-C04D; B10-D03; B10-E04C; B10-F02; B10-G02; B10-H01; B12-M09; B14-F11; E10-H01C; G04-B01; G04-B08; K01-A; L03-H04E6; M12-A01

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